Water Conservation Plan

2013

City of Corpus Christi, Texas

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Water Conservation Plan

1. Introduction

This Water Conservation Plan (WCP) is a guidebook and reference manual for the City of Corpus Christi Water Department, its partners and customers. This introduction chapter outlines the background of the City of Corpus Christi's Water Department, the purpose and reasoning of the WCP, expected results, and an overview of its layout and organization.

1.1 Background of the Water Department

The City of Corpus Christi Water Department is a water utility that has been in operation for over 100 years. It currently serves nearly 500,000 residents of Corpus Christi and the Coastal Bend Region.

Its mission is to effectively manage the City's water supply, production, and distribution system through the operation and maintenance of the water supply system in order to meet water supply needs; to provide safe drinking water that meets state and federal regulations; to review the design and construction of water facilities that ensure water system reliability and adequacy to meet projected growth requirements; and to identify and meet consumer needs and expectations. Our services strategy is to maintain a sufficient supply of water to meet the future growth of our community; to improve efficiency and productivity to support customer satisfaction; and to protect the environment.

The Water Department supplies water for municipal and industrial use in a seven-county service area. Major raw (untreated) water customers include municipalities (Alice Water Authority, Beeville Water Supply District, City of Mathis, San Patricio Municipal Water District) and industries (Celanese and Flint Hills Resources). Treated water customers include Nueces County Water Improvement District No. 4 (Port Aransas), San Patricio Municipal Water District, South Texas Water Authority, and the Violet Water Supply Corporation. The Water Department operates a water laboratory and water maintenance activity that oversees the repair and replacement of transmission and distribution service water lines. The Water Department stays in full compliance with all state and federal requirements.

The Water Department also has a well-established conservation program. The City was the first in Texas to develop a Drought Contingency Plan in 1986, which served as a guide for state officials. Since 1988 they have had a conservation coordinator and/or team of professionals developing and implementing outreach programs to help reduce water waste and improve efficiency. Conservation outreach includes everything from school education to the Xeriscape Garden and is explained in detail in Chapter 5.

1.2 Purpose of the Plan

The purpose of this WCP is to ensure long-term water security and efficiency for the residents and businesses served by the Corpus Christi Water Department. This long-term planning and management is critical so that supplies of water will always meet and exceed the demands of Coastal Bend customers. It allows water supplies to be sustainable as the region grows. Short-term water security and planning during dry times is explained in a separate Drought Contingency Plan, which is included as a supporting document.

As a water supplier, the City of Corpus Christi is also required to have its Plan adhere to Title 30, of the Texas Administrative Code (TAC) Chapter 288 (30 TAC § 288). This Plan contains all of the provisions required in 30 TAC § 288, including conservation plans for municipal users and wholesale providers, and a drought contingency plan.

General and specific goals of the Plan are explained in Chapter 4.

1.3 Public Involvement

The City provided opportunity for citizens to receive information about the Plan, to make comments and to provide input into the preparation of the WCP at a public meeting held on April 17, 2013. A Public Notice was published in the Corpus Christi Caller-Times with the date, time and location of the meeting. Notice was also posted on the City's website (www.cctexas.com).

In addition, copies of the Water Conservation Plan draft were distributed to several public locations around the City and were published on the City's website.

1.4 Organization of the Water Conservation Plan

This revised WCP is organized in a way to make information easy to find and understand. Unlike previous versions, this plan is a separate document from the Drought Contingency Plan (DCP). The chapters guide the reader through the most important issues and are shown below. The end of the WCP contains appendices of other documents that are useful for the reader to understand main chapters.

- **Chapter 1:** Introduction – the basics of the Water Department, purpose of the Plan, and organization of the Plan.
- **Chapter 2:** Supply Profile – details of the supply of the Water Department including the water sources, distribution system, and water treatment plant.
- **Chapter 3:** Demand Profile – details of the current customer population and demand, and estimated projections of future population and demands. Demands are provided in totals and divided into sectors.

- **Chapter 4:** Goals – benefits of conservation; overall water planning and conservation goals; quantifiable five- and ten-year conservation goals and water loss goals based on per capita consumption.
- **Chapter 5:** Water Conservation Practices – efforts that encourage and/or enforce the conservation of water, or that increase the efficiency of water use.

- **Appendices:** includes the Utility Profile, Summary of TCEQ 2001 Agreed Order Provisions, Water Rates, and Reservoir Operating Plan.

2. Supply Profile

This Chapter explains the three sources from which the City gets water supply to its customers in the Coastal Bend region. In addition to the supply sources, the distribution system, water treatment plant, and the wastewater utility profile are briefly explained.

2.1 Supply Sources

The City of Corpus Christi Water Department obtains its water solely from surface water sources. These surface water bodies are Lake Corpus Christi, Choke Canyon Reservoir, and Lake Texana. Details of each of these water bodies are explained below.

Lake Corpus Christi

Lake Corpus Christi is a water storage reservoir located approximately 33 miles northwest of the City. It was completed on April 26, 1958 with the dedication of the Wesley Seale Dam. When full, the lake level is 94 feet above sea level and has a capacity of 257,260 acre-feet (83.8 billion gallons). The surface area of the reservoir is 19,251 acres (30.1 mi^2).

Lake Corpus Christi is part of the Nueces River Basin (or watershed). It receives inflow from the Nueces, Frio, and Atascosa Rivers. Inflow from the Frio River also goes through the Choke Canyon Reservoir. Supply in Lake Corpus Christi relies on rainfall from the whole Nueces/Frio River basin. These two watersheds covers a combined area of 16,764 square miles and reach as far north as Rocksprings in Edwards county, and west close to Eagle Pass in Maverick County.

Choke Canyon Reservoir

Choke Canyon Reservoir is located approximately 70 miles northwest of Corpus Christi. It has a capacity of 695,271 acre-feet (227 billion gallons). When it is full, the water level is 220.5 feet above sea level, and the surface area is 25,989 acres (40.6 mi^2).

The United States Bureau of Reclamation financed, designed, and built the reservoir, which was dedicated on June 8, 1982. The City operates and maintains the facility.

Choke Canyon Reservoir receives inflow from the Frio River Basin. This watershed covers an area of 5,529 square miles from Three Rivers in the south to Kerr County in the north. Water from the reservoir drains into the Frio River, which drains into the Nueces River and then Lake Corpus Christi.

Lake Texana

The third surface source of water for the City is Lake Texana in Jackson County, located approximately 90 miles northeast of Corpus Christi. When full, the lake has a capacity of 161,085 acre-feet (52.5 billion gallons) and the water level is 44 feet above sea level. Its surface area when full is 9,727 acres (15.2 mi^2).

Lake Texana was formed with the completion of the Palmetto Bend Dam in 1980 by the U.S. Bureau of Reclamation. It is on the Navidad River, which is part of the Lavaca River Basin and mainly flows through Lavaca and Jackson Counties. The Lake is currently owned and operated by the Lavaca-Navidad River Authority (LNRA).

The City purchased a permit to withdraw 41,840 acre-feet from the LNRA in the 1990s after a severe drought between 1993 and 1996. During that time, Nueces River Basin stream-flows were the lowest recorded, even lower than the much-remembered 1950s Drought.

To deliver that water to Corpus Christi, the City, the Nueces River Authority, the Port of Corpus Christi and the Lavaca-Navidad River Authority worked together to deliver water via a new pipeline from Lake Texana. The 101-mile-long pipeline was named for the late Mary Rhodes, mayor of Corpus Christi from 1991 to 1997, in recognition of her special contribution to the development of water resources for the residents and industries of the Coastal Bend. The pipeline came online in September 1998. It pumps water through a 64-inch pipeline from Lake Texana directly to the O.N. Stevens Water Treatment Plant in Calallen. Approximately 40 to 70 percent of the water used by Corpus Christi comes from Lake Texana through the Mary Rhodes Pipeline.

A map of the regional water supply system and watershed is show on the next page in Figure 2.1.

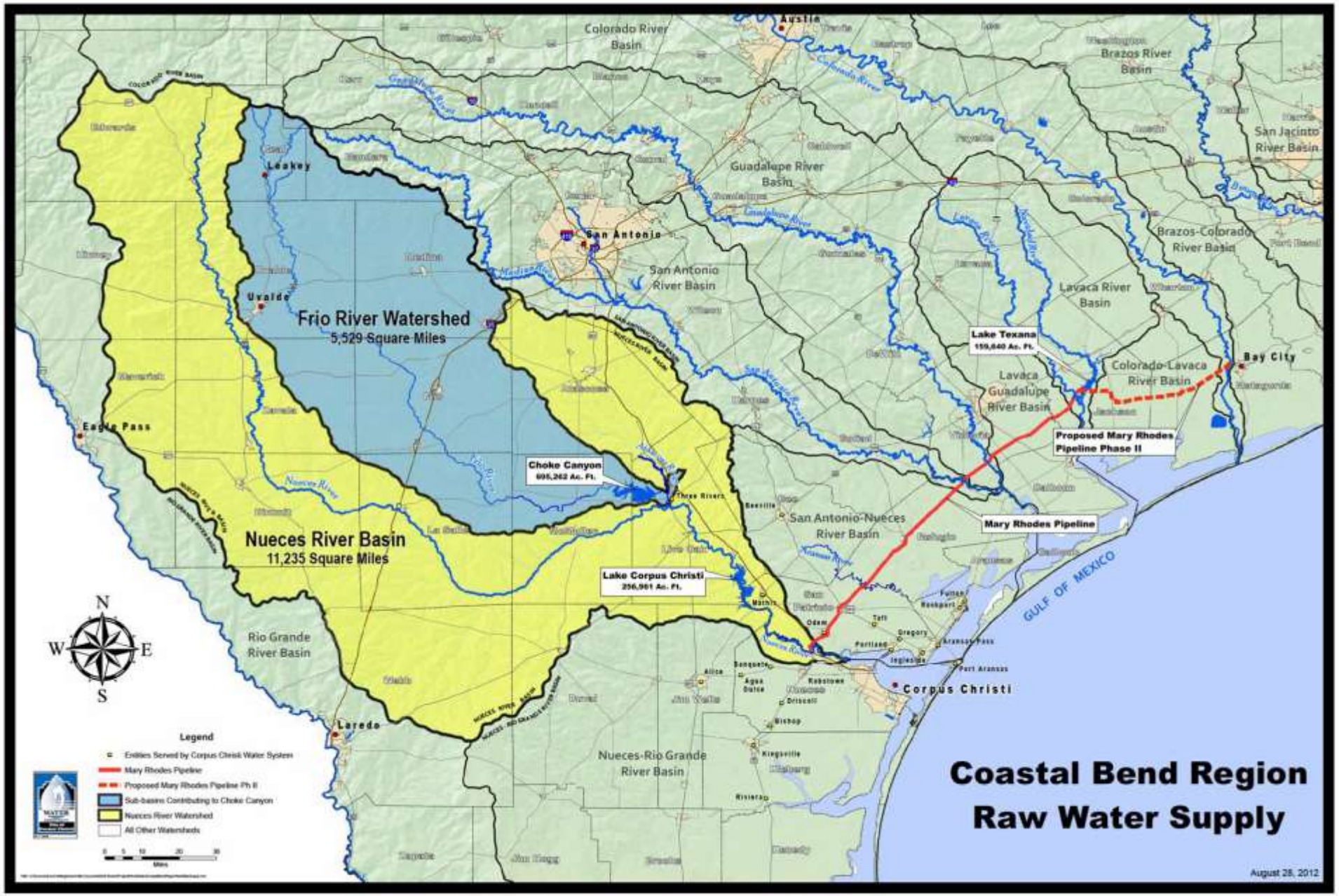


Figure 2.1. Map of the Coastal Bend Regional Water Supply, including the three surface water supply reservoirs.

2.2 Potential Future Sources (Undeveloped Sources)

To meet the demands of a growing community, the City has been taking steps to ensure future water supplies. In 1999, the City purchased senior water rights to 35,000 acre-feet of water per year in the Colorado River. This water will be transported to Corpus Christi via a pipeline that will be constructed, in the future, from the Colorado River to the Mary Rhodes Pipeline at Lake Texana.

In addition, the City is involved with the Corpus Christi Aquifer Storage and Recovery Conservation Distrcit (CCASRCD). This groundwater conservation district was formed in 2005 by the 79th Texas Legislature and is:

> *"…dedicated to protecting groundwater supplies within the District, developing and maintaining an aquifer storage and recovery program, providing the most efficient use of groundwater resources to supplement existing supplies, while controlling and preventing waste of groundwater."*

The CCASRCD is currently exploring the possibility of using groundwater aquifers as storage for extra supply for the City. During wetter-than-normal years, the City would pump excess, partially-treated water into the aquifer storage area, which is not subject to water loss from evaporation. Water from the storage area could then be used during drought periods. A similar project by the San Antonio Water System stores over 90,000 acre-feet of water as an emergency supply.

Other potential future sources of water supply are still being researched and explored. A detailed list of water management solutions for the Coastal Bend Region can be found in the Region N 2011 Regional Water Plan, found at:

https://www.twdb.state.tx.us/waterplanning/rwp/regions/n/.

2.3 Water Customers

The City has both wholesale and retail customers who purchase water from the supply system.

Wholesale Customers

The wholesale customers are water utilities or businesses who purchase the water in bulk, and then bill their own respective customers. The City provides both raw and treated water to wholesale customers. Those wholesale customers receiving raw water pump it directly from the source. The following wholesale customers receive raw water: Alice, Beeville, Mathis, Robstown, and San Patricio Municipal Water District (MWD). In addition, Celanese and Flint Hills Resources receive raw water, but are industrial, not wholesale customers. Those utilities/companies have their own water treatment facilities to treat the water to potable levels.

Other wholesale customers purchase the water from the City after it has been treated at the O.N. Stevens Water Treatment Plant (explained in next section). These customers include: Port Aransas, San Patricio MWD, South Texas Water Authority, and Violet Water Supply.

Retail Customers

The remaining customers receive their water directly from the City. These retail customers are billed individually. They receive their water after it has gone through the O.N. Stevens Water Treatment Plant.

2.4 Water Treatment Plant

The O.N. Stevens Water Treatment Plant, located in Calallen, is the only water treatment facility for the City. All raw water is pumped directly to the Plant from either the Nueces River or Lake Texana (via the Mary Rhodes Pipeline). Once in the Plant, Nueces River water is blended with Lake Texana water and then treated to meet drinking water standards of the Texas Commission on Environmental Quality (TCEQ). After being treated for human consumption, large master pumps help to distribute water into the City and to its wholesale water customers.

Approximately 25 billion gallons of water are treated each year. The O. N. Stevens Water Treatment Plant has a rated capacity of 167 million gallons per day, well above the current peak summer demand of around 100 million gallons per day.

2.5 Distribution

The Water Department has an extensive distribution network that transports water from the O.N. Stevens Water Treatment Plan throughout the City to every customer, both individual and wholesale. The Water Department operates five pumping stations and four elevated storage tanks, and maintains 1,600 miles of pipeline.

2.6 Master Meter

In order to keep track of diverted water, the City uses a series of Master Meters from its points of diversion. The City itself uses two meters to track water use from the Nueces River system and Lake Texana. In addition, City staff keeps monthly records through meters of seven other wholesale and industrial customers who divert raw water from City’s water supply.

2.7 Wastewater Utility Profile

The Utility Profile, a detailed summary of the City's water and wastewater systems is included in Appendix A.

3. Demand Profile

This chapter explains demands placed on the water supply system of the City. Water demand is a measure of how much water is being used. Knowing current demand is critical for the City's daily operations. Projecting future demands helps City workers plan for future growth.

The region's population provides the basis of its water demands. Therefore this chapter will begin in 3.1 with an overview of current population figures of Corpus Christi and the Coastal Bend Region.

The water demands in the Coastal Bend area are complex because of the various customers that the City serves. Besides its own retail customers in and around Corpus Christi, the City provides wholesale water to utilities that serve 18 o*ther* cities and 2 businesses. These people and businesses have their own unique water demands. In addition, there are other demands on the supply system, including evaporation from the reservoirs and environmental inflows into the Nueces Bay and Delta.

Because the demands on the supply system are so complex, the next sections are divided as follows: Section 3.2 will discuss demands based on *raw water* diversions, or water taken directly from the supply source. Section 3.3 will include evaporation and environmental inflows. Section 3.4 will discuss demand on *treated water*, or water that is consumed in the City. This section will also look at demand based on customer type. Section 3.5 will discuss seasonal demand, including summertime peaks. In Section 3.6, projected demands and populations will be discussed.

3.1 Current Population

According to the U.S. Census, the 2010 population of the Water Department's total customer area was close to a half a million people. The majority of this was in the City of Corpus Christi with a population of 305,215. The other 18 cities that depend on Corpus Christi for their water, and their respective 2010 populations, are show in Table 3.1.

Table 3.1 Populations (2010) of cities in the Coastal Bend serviced by the City of Corpus Christi Water Department.

City	Population (2010)	City	Population (2010)
Alice	19,104	Kingsville	26,213
Aqua Dulce	812	Mathis	4,927
Aransas Pass	8,204	Odem	2,383
Banquete	424	Port Aransas	3,482
Beeville	12,863	Portland	15,099
Bishop	3,134	Riviera	1,960
Driscoll	741	Robstown	11,487
Fulton	1,358	Rockport	8,766
Gregory	1,902	Taft	3,038
Ingleside	9,361	Three Rivers	1,851

3.2 Raw Water Diversions

The raw water demand is the amount of water taken directly (diverted) out of the water supply system. It provides the most basic view of demand on the system and gives an overview of where the water is going. As was explained in Chapter 2, the City has several raw water customers in addition to diverting its own water.

After raw water has been diverted from either the Nueces River System or Lake Texana, it is pumped to a water treatment plant. All of the raw water customers have their own water treatment facilities, which clean and disinfect the water before sending it to *their* customers. Each have their own demands, based on retail customer characteristics (Treated water demands are explained in Section 3.4).

In 2011, the total amount of water that was diverted from the City's water supply system for consumption was 132,649 acre-feet (43.2 bil gal). This included water from both the Nueces River System and Lake Texana. The raw water demands of each customer from the Nueces River System are shown below in Table 3.2.

Table 3.2 Raw water demands (diversions) in 2011 from Nueces River System by customer (acre-feet and million gallons).

Raw Water Customer	Diversion Amount (ac-ft)	Diversion Amount (MG)
Alice	7,688	2,505
Beeville	4,514	1,471
Mathis	632	206
Celanese	997	325
Flint Hill Resources	4,623	1,506
San Patricio MWD	11,476	3,739
Nueces County WCID #3	3,877	1,263
Corpus Christi	57,934	18,878

The raw water demands of the San Patricio MWD and Corpus Christi from Lake Texana and Mary Rhodes Pipeline are shown below in Table 3.3.

Table 3.3. Raw water demand (diversions) in 2011 from Lake Texas & Mary Rhodes Pipeline by Customer (acre-ft and million gallons).

Raw Water Customer	Diversion Amount (ac-ft)	Diversion Amount (MG)
San Patricio MWD	10,377	3,381
Corpus Christi	30,531	9,949

In 2011, the City of Corpus Christi received 65% of its raw water from the Nueces River System and 35% from Lake Texana and the Mary Rhodes Pipeline.

3.3 Other Raw Water Demands

One uncontrolled demand of water placed on the supply system is evaporation. As mentioned in Chapter 2, the two reservoirs of the Nueces River supply system cover a large surface area of 45,240 acres when full. Because of this large area, combined with high evapotranspiration rates, water loss to evaporation is high, especially in recent hot, dry years. In 2011, the combined evaporation loss in Choke Canyon Reservoir and Lake Corpus Christi was 228,722 ac-ft (74.5 bil gal). This averages to 204 million gallons of evaporative loss per day in 2011.

Another raw water demand is environmental flow. After the impoundment of Choke Canyon Reservoir in 1982, freshwater flowing in the Nueces River Delta decreased dramatically. In order to maintain an ecosystem balance in the Delta, the City worked with TCEQ, the Nueces River Authority, and the City of Three Rivers to develop an Agreed Order in 1995. This document, revised in 2001, outlines required monthly freshwater inflows by the City into the Delta (Table 3.4). The 2001 Agreed Ordered is included in Appendix B.

Table 3.4. Target Inflows to Nueces Bay from the 2001 Agreed Order (*When lake levels are above 70%)

Month	Target Inflows (ac-ft)	Month	Target Inflows (ac-ft)
January	2,500	July	6,500
February	2,500	August	6,500
March	3,500	September	28,500
April	3,500	October	20,000
May	25,500	November	9,000
June	25,000	December	4,500

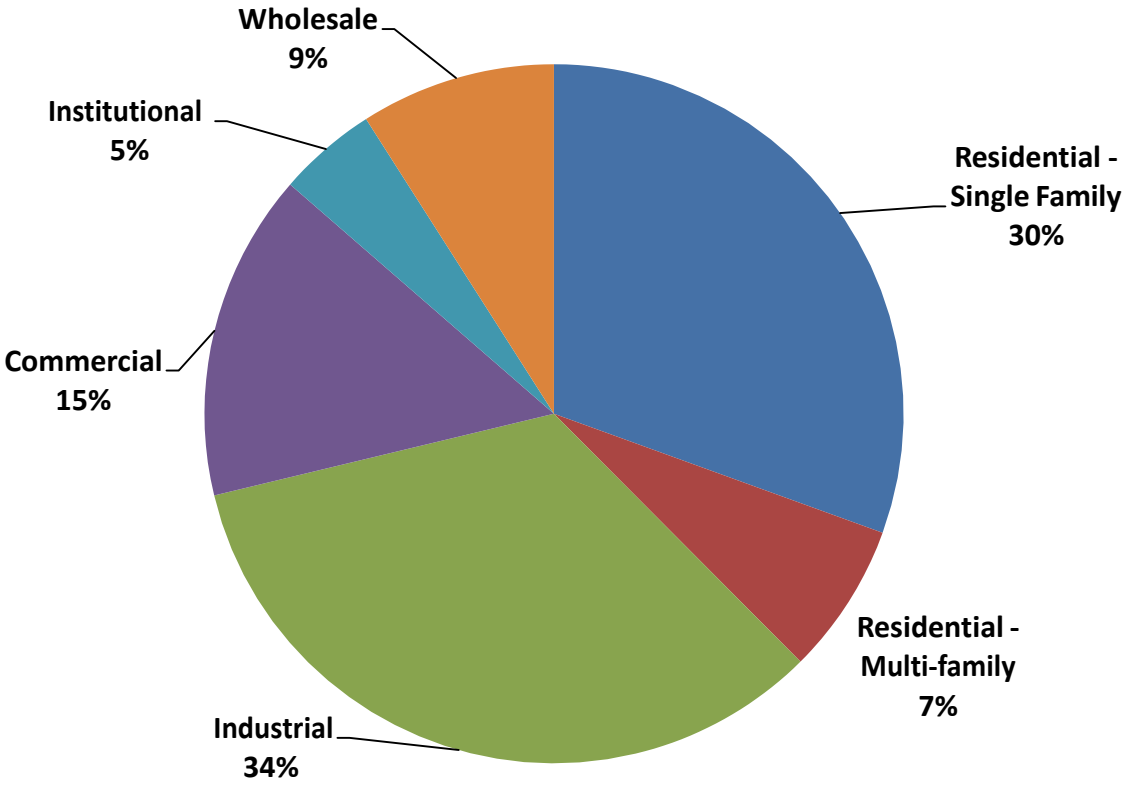
3.4 Treated Water Demands

This section focuses solely on the treated water customers of the City of Corpus Christi.

In 2011, the Corpus Christi Utility Business Office billed the use of 78,146 ac-ft (25.5 bil gal) of water, coming from the O.N. Stevens Water Treatment Plant in Calallen.

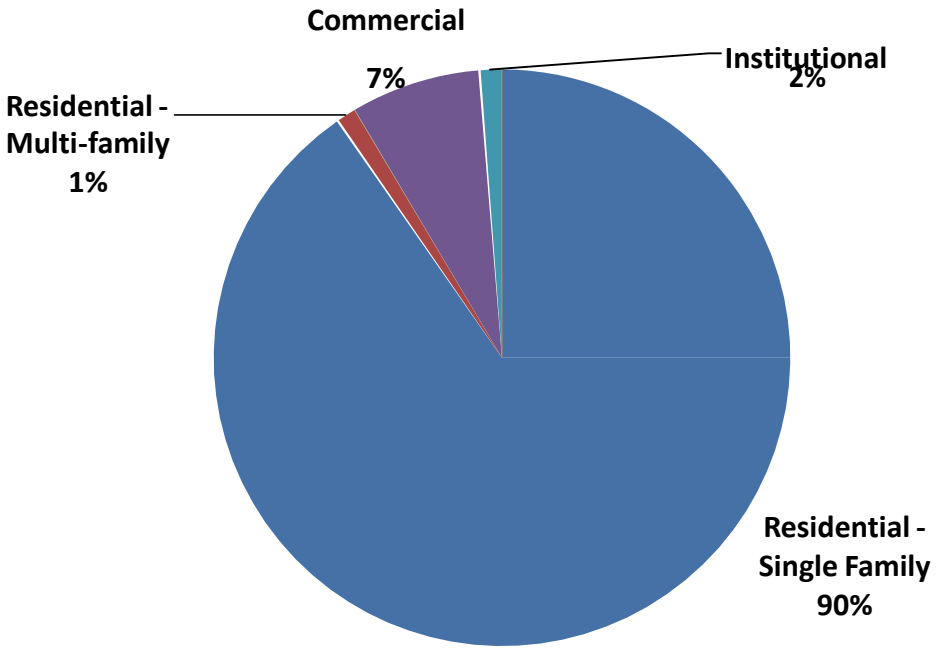
Separating treated demand by customer class, industrial customers represent the highest demand. Of the 78,146 ac-ft consumed in 2011, industrial customers used just over 26,000 ac-ft or 34 percent of the total. Residential customers consumed 23,900 ac-ft (7.8 bil gal), representing 31 percent of the total. Commercial water use accounted for 15 percent and wholesale customers consumed 9 percent. The remaining water users, multi-family and institutional (dedicated to public service, i.e. schools, hospitals, government uses, etc.), used seven and five percent, respectively. See Figure 3.4 below.

Figure 3.4. Treated Water Use by Customer Class (wholesale included)



In 2011, there was an average of 89,205 treated water connections. These connections can be divided into the customer classes of residential, multi-family, commercial, industrial, wholesale, and government use. Figure 3.4.1. below shows a breakdown of connections by customer type. Both wholesale (4 connections) and industrial (23 connections) customers have so few connections that they constitute far less than one percent each of the total connections. Residential customers make up the largest percentage of connections with 88 percent. Following residential are commercial customers with eight percent of the connections and multi-family and government, both with two percent of the connections.

Figure 3.4.1 2011 Connections by Customer Class (Treated Water Only)



3.5 Seasonal Demands

Though the treated water demand for 2011 was 78,146 ac-ft (25.5 bil gal), the consumption was not evenly distributed throughout the year. The drought of 2011 was one of the worst in recorded history for Texas, so water demands for irrigation were high, especially during summer months. This can be seen below in Figure 3.3, which shows seasonal demand of treated water in 2011. Customer demand on water ranged from 1.6 billion gallons in February to 2.7 billion gallons in September.

Seasonal demands by customers lead to “peak demands.” These peak demands put the most amount of stress on operations, including distribution and treatment. It is extremely important that peak demand for the city remains under 167 million gallons per day, which is the maximum volume that the O.N. Stevens Water Treatment Plant can treat. Figure 3.5 below shows daily treatment plant production volumes for each month of 2011 as minimums, maximums, and averages. The maximum values of each month (in green) represent the peak demand volume for that month. Even though 2011 was one of the hottest and driest years on record, maximum production never reached above 100 MGD.

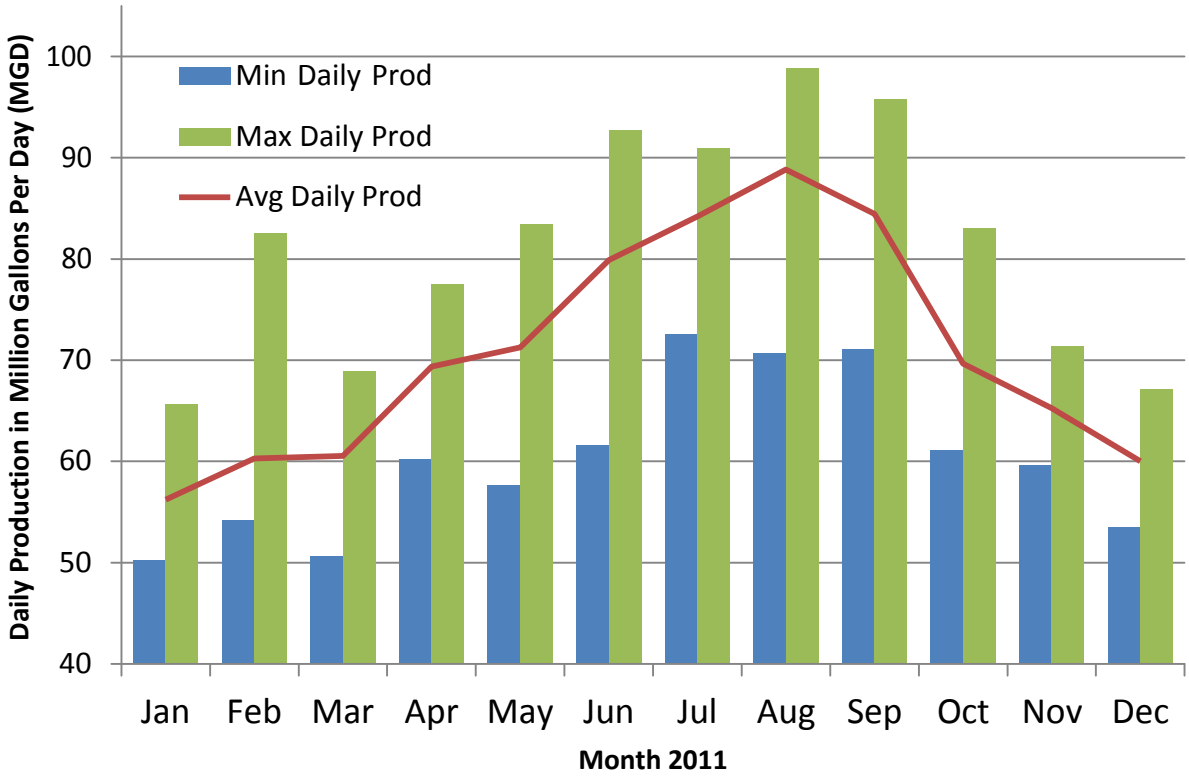


Figure 3.5. Daily production volumes of the O.N. Stevens Water Treatment Plant, showing seasonal demand as minimums, maximums, and averages for each month of 2011.

3.6 Projected Populations and Demands

The Texas Water Development Board estimates population projections for regional water planning groups. For Corpus Christi, they estimate that the population could reach 470,000 by the year 2060. This increase in population will result in an increase in water demand.

The TWDB estimates that municipal water demand (residential and commercial) for Corpus Christi will increase 40% by 2060, reaching 86,962 ac-ft per year. These projections are for the City of Corpus Christi only. Other cities that rely on Corpus Christi for water will also have increases in population and demand, resulting in an even higher demand on the supply system.

However, these projections only factor in a minor decrease in per capita water use from conservation measures. A more aggressive conservation program could help municipal demand level off or decrease, even with an increase in population. A goal of 1% annual reduction in municipal consumption (greater than the 0.9% population growth) would defer the need for additional supplies, at least for the next 15 years. This goal, along with others, is explained next in Chapter 4.

Projecting industrial consumption, which comprises over 30% of the City's water use, is challenging considering the large volumes that one additional customer can demand. The Region N Water Planning Group projects treated industry water demand could increase by

15,422 acre-feet by 2060. Other industrial demands not receiving treated water from the City are expected to increase by 29,000 acre-feet by 2060.

4. Goals

This Chapter explains the water conservation goals of the City. These goals are what the City aims to achieve by the implementation of this Plan. Included in these goals are both qualitative goals and measureable, quantifiable goals. Before these goals are discussed, the first section (4.1) explains the benefits of conservation. This will give reason and justification for the City's conservation efforts and provide a driving factor for the goals.

4.1 Benefits of Conservation

There are several benefits to having a strong conservation program for Corpus Christi. These benefits not only include maintaining the City's water supply, but also include saving the City and residents money by deferring capital expenses. Other benefits may be more difficult to quantify or may take years to materialize, but that does not lessen their importance. Each benefit of conservation listed below will help the City of Corpus Christi grow and thrive at a sustainable rate. The benefits of conservation include:

- **Sustainable Water Supply** – By reducing per capita water use, the City can grow without compromising supplies for future generations.
- **Defers Capital Costs** – Reductions in demand delay the need for new water supplies and thus defer the costs necessary to construct or buy new supplies. Reducing demand also delays other costs associated with new supplies such as electricity, labor, and treatment.
- **Reduces Peak Demand** – Peak demand puts the most stress on the Water Department's operations. Conservation measures would help to reduce this peak demand.
- **Reduces Energy Costs** – The City spends a significant portion of its electric bill on moving water through its distribution system. Conservation would reduce the amount of water pumped, thus reducing electric costs.
- **Reduces Wastewater Costs** – Less water being used by residents equals less wastewater that needs to be treated. Having less wastewater will save the City in treatment costs.
- **More Environmental Inflows** – By reducing water use, the City will have more stored water available to release into the Nueces Delta and Bay, providing needed freshwater inflows to the ecosystem.
- **Less Rural Impact** – By reducing water use, Corpus Christi will not need to divert water from rural regions or construct a new reservoir on rural properties.

4.2 Water Planning/Conservation Goals and Objectives

The main, overall goal of this Plan is to *reduce total per capita consumption by one percent annually over the next decade*. This goal uses the 2012 figure of 205 gallons per capita per day (gpcd) as the benchmark for reduction. Another related goal is to reduce summertime peak

demand. To achieve these goals, the City has several specific conservation objectives. Those objectives include:

- Reduce water loss by one percent annually
- Educate the public on water conservation practices
- Educate the public on the City's water resources
- Implement incentive and/or rebate programs to encourage conservation
- Convert some drought restrictions into regular conservation measures
- Adopt new water conservation regulations
- Enforce the conservation regulations
- Adopt a water-billing rate scale which encourages stronger conservation efforts
- Implement conservation measures at city-owned facilities

4.3 Five and Ten-Year Quantifiable Conservation Goals

As mentioned in the previous section, the goal of the Plan is to decrease total per capita water consumption by one percent each year. To track the progress of the goal, the City records the gpcd every year and sets five and ten year goals. This gpcd is measured by taking the volume of water produced by the O.N. Steven Water Treatment Plant, excluding water sold to treated wholesale customers, and dividing it by the permanent population and then dividing it by 365 days. Because industry uses close to 40% of the treated water, Corpus Christi's gpcd is greater than most Texas cities. In addition, there is high variability in annual consumption due to changes in weather. Residents tend to use much more water in dry years to keep landscape vegetation alive. The total gpcd, residential gpcd, and water loss are show in Tables 4.1-4.3 below. The five and ten year goals listed below in Table 4.4, and are based on a 1% annual reduction from the 2012 consumption of 205 gpcd.

Table 4.1. Total Gallons Per Capita Per Day (gpcd) in 2012

Total System Input in Gallons[1]	Permanent Population	Total gpcd[2]
23,401,300,000	312,065	205

1. Equals water produced + wholesale imported – wholesale exported
2. Equals system input ÷ permanent population ÷ 365 days

Table 4.2. Residential Gallons Per Capita Per Day (gpcd) in 2012

Residential Use in Gallons (single + multi-family)	Residential Population	Residential gpcd[2]
8,715,547,520	312,065	77

1. Single family + multi-family
2. Equals residential use ÷ residential population ÷ 365 days

Table 4.3. Total Water Loss (Fiscal Year 2012)

Total Water Loss in Gallons[1]	Permanent Population	Water Loss[2]	
		GPCD	Percent
1,893,644,000	312,065	17	7.5

1. Equals real + apparent + unidentified losses
2. Equals total water loss ÷ permanent population ÷ 365 days

Table 4.4. Targets and Goals

Achieve Date	Target for Total GPCD	Target for Residential GPCD	Target for Water Loss	Target for Water Loss Percentage
Five-Year Target Date: 2018	**195**	**73**	**1,782,000,000**	**7.1**
Ten-Year Target Date: 2023	**184**	**69**	**1,695,000,000**	**6.7**

4.4 Schedule for Implementing Plan

In order to achieve the targets and goals of the plan, the City will use the schedule below in Table 4.5 to gradually introduce new or strengthen existing conservation measures and programs. These programs will utilize all and possibly additional measures as detailed in Chapter 5. The measures aim to reduce per capita water use through changes in habit, improvements in efficient devices, decreases in water waste, and smart planning. This schedule is not all inclusive and is a living document and is therefore subject to change.

Conservation Measure	Purpose	Target Date
Plumber to people	Reduce leaks in homes of lower-income residents	Ongoing
School education	Educate youth about water resources and the importance of conservation	Ongoing
Public information	Educate the public about water conservation through several media outlets	Ongoing
Xeriscape education	Educate the public about Xeriscaping through the Xeriscape garden, fliers, and the annual symposium	Ongoing
Use of Reclaimed Water	Reduce potable demand by increasing the number of golf courses, parks, etc. that are using reclaimed water for irrigation	Ongoing; Private golf course by December 1, 2013.
System Water Audit and Water Loss	To identify areas of water loss to target remediation efforts	Annually
Park Water Conservation	Reduce consumption by the City by improving irrigation	Ongoing; Smart controllers for Bayfront

	efficiency and Xeriscape landscaping	by July 1, 2013 Spray irrigation replacement with drip by January 1, 2014
Prohibition on wasting water	Reduce consumption by prohibiting the wasting of water, regardless of drought conditions (see 5.2.1)	June 1, 2013
Irrigation Timing	To reduce evaporative loss and waste by prohibiting sprinkler irrigation between 10 am and 6 pm, regardless of drought conditions	June 1, 2013
Restaurant water saving	Reducing water waste by requiring restaurants to only serve water upon request	June 1, 2013
Irrigation Consultation	Improve efficiency of irrigation systems	August 1, 2013
Rainwater harvesting rebate	Reduce potable demand by encouraging rainwater harvesting	August 1, 2013
Changes to Unified Development Code (UDC)	Make change in the UDC to include certain requirements in new construction for rainwater harvesting, condensate collection, car washes, cooling towers, laundry facilities and site-appropriate turfgrass.	March 1, 2014

5. Water Conservation Practices

5.1 Introduction

Water conservation is any practice that reduces the use of water, whether through changes in practices or improvements in the efficiencies of water devices. Reducing the use of water reduces the stress placed on water supplies and their ecosystems. It also frees up water supplies to allow for population and economic growth without having to search for "new" water. Conservation is a cost-effective and commonsense approach to ensuring a sustainable water supply for generations to come.

The City has a long-standing commitment to promoting water conservation in the community. It has adopted several practices, ranging from public education to conservation pricing, that encourage a reduction in excessive water use. As was mentioned in Chapter 4 (Goals), the long term goal of the conservation program is to *reduce per capita water use by one percent per year over the next decade*. This Chapter highlights all of the ways that the City intends to reach that goal.

Chapter 5 begins with conservation measures (5.2). These are regulated best-management practices that are in effect year-round, regardless of the drought condition or the levels of the City's reservoirs. Section 5.3 explains planned changes to development and building codes that would make buildings and landscapes more water efficient, while Section 5.4 explains the current code related to landscaping. Section 5.5 explains Rebates and Incentives, which include Plumbers to People, Rainwater Harvesting Rebate, and an Irrigation Consultation Program. Section 5.6, discusses City-Led Programs, including reclaimed water use, improvements to City-Owned properties, park water conservation, metering, system audits, and a water conservation staff. This is followed by Section 5.7, which highlights the educational efforts by the City, including both schools and public programs, and Section 5.8 on water conservation pricing. The last two parts of Section 5 explain coordination with the Region N Water Planning Group, methods to monitor the effectiveness of the various conservation practices, and means of implementation and enforcement.

5.2 Water Conservation Measures

As water demands increase and water supplies become less available, it is critical that water conservation measures become regular, year-round best management practices. They are common sense approaches that reduce water waste and improve efficiency. This section lists those water conservation measures that are regulated and enforceable. They are the only measures in the WCP that are enforceable. The Water Resource Management Ordinance (Section 55) gives the City the authority to enforce these measures and is included in Appendix A. Explanations of each of these conservation measures are shown below:

5.2.1 Prohibition on Wasting Water

Under the Prohibition on Wasting Water Conservation Measure, it is unlawful to waste water. Actions leading to the wasting of water are prohibited and will be enforced. No person shall:

1. Allow water to run off property into gutters or streets.

2. Permit or maintain defective plumbing in a home, business establishment or any location where water is used on the premises. Defective plumbing includes out-of-repair water closets, underground leaks, defective or leaking faucets and taps.

3. Allow water to flow constantly through a tap, hydrant, valve, or otherwise by any use of water connected to the City water system.

4. Use any non-recycling decorative water fountain.

5. Allow irrigation heads or sprinklers to spray directly on paved surfaces such as driveways, parking lots, and sidewalks in public right-of-ways;

6. Operate an irrigation system at water pressure higher than recommended, causing heads to mist, or to operate with broken heads.

5.2.2 Irrigation Timing

Landscape irrigation is most efficient during early-morning or nighttime hours, when there is less potential for evaporation from the sun. This conservation measure prohibits irrigation by spray or sprinklers between the hours of 10 am and 6 pm. It is still permissible to water by hand or by drip irrigation at any time of the day.

5.2.3 Restaurant Water Saving

Under this conservation measure, commercial dining facilities must only serve water upon request. In addition, any hand-held dish-rinsing wand must have an automatic shut-off.

5.3 Future Updates to Codes

Another water conservation practice that will help to conserve water in the long term is updates and improvements to codes. The City has adopted several codes for development and construction, which are updated on a regular basis. There are several codes which could be updated or amended to include requirements for water conservation. A list of *potential* updates to codes is included below. The process of updating these codes is ongoing and will be included

in the WCP as an amendment when complete. *These bulleted items are proposed updates only and are listed here as a placeholder.*

- **Car Wash Water Conservation** – Many commercial car washes in the region do not recycle water in their operations. Under this proposed measure, new car washes using an automatic system would need to reuse a minimum of fifty (50) percent of water from vehicle rinses in subsequent washes. All car washes that are self-service would have to have spray wands that do not emit more than three (3) gallons of water per minute.
- **Water Saving Plumbing Fixtures** – This proposed conservation measure would require plumbing fixtures to meet or exceed the standards set by the WaterSense label of the Environmental Protection Agency (EPA). The fixtures would include gravity flush toilets, bathroom aerators, showerheads, and urinals. This measure would apply to new plumbing installations
- **Laundry Facility Conservation** – Under this proposed measure, any new installation of a coin-operated washing machine would have to meet or exceed the standards for the most current Energy Star label of the EPA and Department of Energy. This measure applies to any location that may have a coin operated facility, such as laundromats, apartment communities, or university residential buildings.
- **Cooling Tower Recycling** –This proposed conservation measure would require newly constructed cooling towers to utilize recycled water for a minimum of four (4) cycles.
- **Rainwater Harvesting** –This proposed conservation measure would require any new building construction with a minimum roof surface area of ten-thousand (10,000) square feet to install a rainwater collection system. The stored water could be used for non-potable indoor use and/or outdoor irrigation.
- **Condensate Collection** –Under this proposed measure, any new commercial building with an air conditioning system would be required to divert and collect the condensate water. This water could be used in cooling tower operation or landscape irrigation.
- **Xeriscape Landscaping** –This proposed measure would allow xeriscaping as an option for landscaping in any residential neighborhood or subdivision, regardless of deed restrictions. It also would require homebuilders and/or developers who are constructing new, single-family residential homes to offer a xeriscaping option.
- **Turfgrass Species Requirement**–This proposed conservation measure would promote the use of turfgrass appropriately suited for a particular site in order to save on irrigation water. For any new construction, the turfgrass species/variety installed on a property would have to be chosen from a list of approved species. In addition, irrigated turfgrass would not be able to exceed 50% of the landscaped area.

5.4 Landscaping Standard

The City adopted a Landscape Standard as part of its Unified Development Code (Section 7.3 of the UDC). This standard requires landscape plantings within commercial developments to enhance the beauty of the City. The ordinance assigns points to the various plant materials. To encourage the use of water-wise landscaping, drought-tolerant and low-water-use species are assigned a higher point value. To comply, a landscape design must surpass an established threshold number of points, which is achieved more easily with the water-wise and drought-tolerant plants.

5.5 Rebates and Incentive Programs

This section explains the programs that the City offers to provide assistance to customers who wish to implement water conserving practices. These programs include the current Plumbers to People program and proposed Rainwater Harvesting Rebate Programs and an Irrigation Consultation Program. Additional rebate and incentive options are being researched.

5.5.1 Plumbers to People

Plumbers to People is an affordability program to provide plumbing assistance to low-income residential customers seeking to repair plumbing fixtures in their homes. The intent of the program is two-fold: (1) to eliminate the cycle of uncollected high water bills resulting from water leaks; (2) to promote water conservation.

Persons eligible for the program must contact the Utility Business Office (UBO) to identify their eligibility for the program. Eligibility is based on the individual's income limits and need for assistance.

The UBO office arranges for a contracted plumber to do repairs at the individual's home. The plumber will fix minor leaks or other issues, then send a report and invoice back to the UBO office.

5.5.2 Rainwater Harvesting Rebate

The City is planning a rainwater harvesting rebate program. Under this program, customers of the Water Department will be eligible for a $50 rebate for the purchase and installation of a rain barrel. The customer shall submit an application for the rebate and is subject to a system inspection by the Water Department. There will be specific requirements, such as a minimal size (55 gallons) and mandatory screening to prevent mosquito entry. The Water Department plans to begin the program in late 2013.

5.5.3 Irrigation Consultation Program

The City is planning an Irrigation Consultation Program to reduce water waste and improve efficiency on large, existing irrigation systems. The service will be free to commercial sites and tells property owners how they can make meaningful changes to

their irrigation system. It will begin with a consultation request from the property owner of a large irrigation system. The Water Department will coordinate a consultation with a contracted, licensed irrigator for that property. The licensed irrigator will perform a thorough inspection of the irrigation system's performance.

A report with recommendations will be provided to the property owner and the Water Department. The recommendations may include ways that the property owners can drastically reduce water consumption. The Water Department will analyze each report and may provide assistance with the recommended changes, depending on the cost and benefits. One year after the inspection, a follow-up will be performed to see if recommendations were implemented and how much water consumption was decreased.

The program will begin in late 2013 to only commercial water accounts.

5.6 City-Led Water Conservation Programs

This section explains the programs that the City has initiated in order to improve its own efficiency and promote conservation to its residents. These programs include the use of reclaimed water, improvements in City-owned properties, park water conservation, accurate water metering, and a system to audit water loss. It also includes the use of a permanent, full-time water conservation staff.

5.6.1 Use of Reclaimed Water

Reclaimed water by definition is, "Domestic or municipal wastewater which has been treated to a quality suitable for a beneficial use, pursuant to the provisions of this chapter and other applicable rules and permits" (30 TAC §210.3(24)). The City currently has five reclaimed water use customers and recognizes that the direct use of reclaimed water is an effective method of reducing potable water usage. Corpus Christi reclaimed water is used primarily for irrigating recreational tracts.

Historically, Corpus Christi began its reuse program in the early 1960s when it began delivering reclaimed effluent to its first customer, the Gabe Lozano Golf Course. Over the next several decades, the City acquired additional reuse customers which include other golf courses, parks, and recreational areas. Approximately 2.5 percent of the City's overall effluent flows are reused as reclaimed water.

In 2011, the City supplied 525 million gallons of reclaimed water to its irrigation customers, saving an estimated 100% of the same amount in potable water.

To facilitate expansion of its reuse program in the future, the City will identify and rank industrial, commercial, and institutional (ICI) customers according to volume of water use, and investigate the feasibility of using reclaimed water. The City will also

investigate reuse opportunities within its own accounts or with third parties outside its service area. The City owns several public areas that are candidates for reuse.

5.6.2 Improvements in City-owned Properties

In order to be a representative of its conservation message, the City has pushed for increased Xeriscape landscaping of City-owned properties. This includes water-wise landscaping at the Water Department building, and the Xeriscape Design Garden and Learning Center at the Museum and Science and History in downtown Corpus Christi (see Section 5.6.3). The Water Department will encourage the future conversion of City landscaping to more water-wise design.

Also, the City has been proactive in replacing out-dated, inefficient plumbing fixtures in its buildings. In addition, the City plans to install a rainwater harvesting system at the Water Utilities building to be used for on-site irrigation.

5.6.3 Identifying and Repairing Leaks

The Water Department has a full team of employees committed to identifying and repairing leaks in water distribution throughout the City. A crew of round-the-clock responders follow the procedure below to find and fix a leak:

1. A first responder is sent to the location to identify and mark the priority of the leak. Response time is 30 minutes to an hour.
2. Crews begin to turn the needed valves to isolate the leaking line. Line locates are called in to mark all other utility lines in the area of the leak prior to repairs. Depending on the severity of the leak these locates can take up to approx. 24 hours
3. After line locates are complete, Distribution Leak crews respond to the leak and make all needed repairs.
4. After repairs are complete, the D & D crews back fill the area and replace grass as needed.

In addition, the Water Department is using its automatic meter reading (AMR) system to identify leaks by alerting staff when there are unusual spikes in consumption.

5.6.4 Park Water Conservation

The City of Corpus Christi Parks and Recreation Department manages two golf courses, two large City-wide parks, five recreation centers, four decorative fountains, eight public swimming pools, and more than 200 neighborhood parks, some with irrigated athletic fields.

Because many of the parks in the City require irrigation, it is critical that proper conservation measures are in place so the City demonstrates and promotes those measures to the public. The Water Department works with the Parks and Recreation

Department to implement several water conservation practices within the park system. Some of these measures include:

1. Converting manual irrigation systems to automatic irrigation systems.
2. Including the parks properties in the water system audit.
3. Voluntarily adopting Landscape Ordinance provisions of the Corpus Christi Zoning Ordinance (explained in Section 5.2.12).
4. Replacing several spray irrigation heads with drip irrigation.

Some of the conservation measures that the City is pursuing for the future include:

1. Updating automatic irrigation systems with a "smart" Baseline Controller, which can remotely control up to 50 irrigation zones with 10 different programs. These include moisture sensors in the soil.
2. Implementing an irrigation consultation program to target specific areas where water efficiency improvements can be made.
3. Converting turfgrass species to more site-appropriate varieties to reduce water use.

To track the progress of water conservation in the parks, the Water Department will gather the following:

1. Water savings resulting from the offset of potable water use by irrigating with reclaimed waste water.
2. Water savings attributable to the repairs of leaks
3. Changes to irrigation systems, retrofits, or upgrades; regular leak detection; maintenance policies, and estimated water savings from conservation practices.
4. Estimated water savings attributable to the changes implemented.
5. Costs of repairs, equipment upgrades, or new equipment installed.

The Water Department will evaluate data from sites before and after significant irrigation system changes or upgrades. The City maintains performance measure software to monitor the progress of leaks repaired. The Maximo software will identify individual categories to estimate the volume of water savings attributable to repairs of leaks.

5.6.5 Metering All Connections

Metering is a critical aspect in water conservation. It provides a method for customers to relate their water usage to their utility bill. For the City, meters help keep track of water use in order to target areas of inefficiency or locate areas where there may be potential leaks. New technology allows the city to track water use remotely and alert employees when there are spikes in water use among customers.

The following elements are part of the City's on-going metering program:

1. Required metering of all connections.

2. A policy for installation of adequate, proper-sized meters as determined by a customer's current water use patterns.
3. Direct utility metering of each duplex, triplex, and four-plex unit, whether each is on its own separate lot or there are multiple buildings on a single commercial lot.
4. Metering of all utility and publicly owned facilities.
5. Use of construction meters and access keys to account for water used in new construction.
6. Implementation of the State requirements in HB 2404, passed by the 77th Legislature Regular Session and implemented through Texas Water Code 13.502, which requires all new apartments be either directly metered by the utility or submetered by the owner.
7. Annual testing and maintenance of all meters larger than two inches. Regular replacement of 5/8" and 3/4" meters after 15 years of service.
8. Replacement of meter registers or entire meter every eight years.
9. An accounting of water savings and revenue gains through the implementation of the Water Department's meter repair and replacement procedures.

Each year the Water Department estimates its annual water savings from the program. Savings can be estimated based upon a statistical sample analyzed as part of the meter repair and replacement program.

The City maintains a meter replacement policy based upon a customer's concern about the accuracy of his meter. Annual records of replaced meters are maintained through the City's Maximo software. Meter replacement takes precedence over meter repair due to the cost of repairing old meters. The City has improved efficiency and cut water loss by purging old meters and converting standard meters to automated meter reading (AMR.). The AMR program is a metering system that remotely records usage and accurately integrates that data into the billing system. Around 99 percent of the City's water meters have been installed with the AMR, benefiting the City by improving meter accuracy and reducing the cost of reading meters manually.

5.6.6 Record Management

The City's has a system of record management to classify customers by sector for billing purposes and to keep track of water consumption by class. The billing system has the ability to categorize customers into sectors that can be summarized into those required by the Texas Water Development Board and the Texas Commission on Environmental Quality. These sectors include: residential (including single-family and multi-family); commercial; institutional; industrial; and wholesale (the City does not have any agricultural customers).

5.6.7 System Water Audit and Water Loss

As with any aging infrastructure system, the City does have water loss between the treatment plant and the point of use. In order to reduce this water loss, the City performs an annual system water audit. This estimate of system water efficiency is achieved by

comparing water delivered to the treatment plant, potable water produced, and water sold. The Water Department tracks numerous leak detection and repair activities and is able to evaluate its success using the asset management software to compile and track work orders. Using this data from the audit, the City is able to focus on specific areas where improvements in efficiency can be achieved.

5.6.8 Water Conservation Staff

The Water Department has two staff members who coordinate and implement water conservation programs for the City and its service area. These employees include the Water Resource Planner and the Management Assistant. They are critical to ensuring the success of the City's overall conservation program.

The *Water Resource Planner* is responsible for planning conservation programs; seeking and identifying new opportunities in conservation and water supply; program analysis; contributions as a member of regional workgroups (BBACS, GMAs, Region N, Nueces Feasibility, CCASRCD); assistance with educational/promotional material; planning Irrigation Consultation Program; meetings with stakeholders; assistance with marketing strategies for conservation programs; assistance with annual conservation budget; assistance to the Water Resource Advisory Committee; preparation and submittal of annual conservation status reports to Water Department management.

The *Management Assistant* is responsible for the City's water public relations and marketing; implementing conservation programs; conservation education and marketing; coordinating with other departments and wholesale customers; coordinating programs within the Water Department; development of marketing strategies for conservation programs; management of consultants, and contractors, when appropriate; preparation of annual conservation budget; assistance to the Water Resource Advisory Committee.

This conservation team takes part in several educational events and programs, which are explained in detail in section 5.7.

5.7 Education

One of the most effective ways to improve conservation and water-use efficiency is through education. The Water Department is very active in educating its customers and has several programs to do so. The Water Department has two purposes for its educational programs: to disseminate information and to change behavior. Information dissemination is education that makes the public aware of something timely, such as a current drought stage and its implications. A change in behavior occurs when education teaches the public practices that should be permanently adopted. Behavioral changes take place over a longer span of time than information dissemination, but both purposes are critical to a well-informed public.

This section highlights the educational programs that the Water Department plans, manages, and implements. These programs include school education, public information, and the water-wise landscape and conservation program.

5.7.1 School Education

School education programs increase the viability of water conservation efforts, enhance the utility's public image, contribute to the attainment of Texas state education goals by students, and increase customer goodwill. The message conveyed by students to their families based upon greater knowledge of water sources and conservation can lead to behavioral changes resulting in both short- and long-term water savings.

The Water Department offers various school educational programs to all grade levels throughout the City of Corpus Christi. These programs include:

- Major Rivers – Part of the 4th grade curriculum, the program educates students on water conservation, supply, treatment, distribution and conservation. The self-contained program offers academic and hands-on activities in math, language arts, science, and social studies, with teacher's guide geared to the interdisciplinary curriculum, as well as an introductory video and home information leaflets.
- Toby Globy Eco-Action – Introduced to school children in grades pre-kinder to second grade with classroom and special event visits by mascot Toby Globy, this locally produced bilingual program brings environmental awareness to primary grade school children in sing-along song and coloring books, a compact disc of recorded music in English and Spanish, environment-oriented classroom activities, posters, and a pictorial instruction booklet introducing solid waste and recycling, in addition to water conservation.
- Learning to be Water Wise – This program is used in 5th grade classrooms to connect science, math, language arts, and social studies with water conservation activities. Boxed kits, which include a toilet water displacement bag, toilet leak detector tablets, showerhead and faucet aerators, and instructions for repairing common toilet leaks, are given to each student.
- Workshop for Daycare Teachers – In a half-day-long workshop, pre-kinder to second grade teachers are introduced to age-appropriate water resources teaching aids, including the educational program "Toby Globy Eco Action Team" and coloring books with a water-conservation message.
- Water Source Book – The Water Source Book, developed by the Water Environment Federation, reinforces water resource issues with hands-on classroom activities and experiments for grades 6 through 8. The classroom activities feature water, wastewater, and storm water experiments. This book is provided by the City to all local school resource libraries. Continuing education workshops introduce local classroom teachers to the Water Source Book. Teachers can utilize this teaching aid to satisfy certain TEKS objectives as established by the Texas Education Agency.

- Coastal Bend Teacher Resource Extravaganza – As a member of the Coastal Bend Informal Educators (CBIE), the City Water Department sponsors this event, which brings environmental resources to teachers throughout the Texas Education Agency Region 2 area. The City Water Department also participates in this annual event, offering valuable opportunities and resources for teachers, students and the general public.
- Museum of Science and History – The Corpus Christi Museum of Science and History houses an educational gazebo, targeted to children, featuring various showcases and an 8-foot interactive topographic map of the Nueces River Basin. The touch of a button activates lights and sound to explain the area's water resources. Displays throughout the Xeriscape Learning Center and Design Garden are used as teaching tools for children and adults.
- Other educational events – The Water Department provides age-appropriate water resources teaching materials at several public events. Materials include *Splash Activity Book, My Book About Water and How to Use it Wisely*, and *The Story of Drinking Water*. Spanish material is also available upon request.

The Water Department continues to offer the programs mentioned above, being sure to stay up-to-date on any changing information related to water. They also continue to stay connected to local schools in order to identify any new potential opportunities.

To keep track of the impact of these various programs, the Water Department records:

- The number of presentations made
- The number and type of curriculum materials developed and/or provided
- The number and percent of students reached by presentations and by curriculum
- The number of students reached outside the utility service area
- The number of in-service presentations or teacher's workshops conducted during reporting period
- The results of evaluation tools used
- Copies of program marketing and educational materials
- Annual budget for school education programs related to conservation.

Although water savings caused by school education programs are difficult to quantify, the retrofit kit included with the Learning to be Water Wise program has been shown to reduce domestic water use by 8,885 gallons per year per household.

5.7.2 Public Information

The Water Department employs several types of media resources and modes of mass communication to present a compelling and consistent message about the importance of conservation and water use efficiency. The overall goal of the public information program is to raise awareness among customers of the regional water resources and the importance of conservation. The public information is also used to convey timely,

urgent messages, such as those about drought or emergencies. Each year in June, the Water Department mails a Consumer Confidence Report to every customer. This report is available online to anyone including new customers. It explains water quality and explains to customers where they can get more information on water conservation.

The Water Department employs the following methods to raise water resources awareness and to instill the importance of conservation in the community:

- Multi-tiered media campaign – Annual television, radio, and print campaigns promoting water use efficiency. Agreements with radio and television stations provide for matching airtime for each ad purchased by the City.
- Billboard advertisement – Ads on billboards, bus benches, and other public spaces are used to promote water conservation and water quality.
- Website – The Department's Water Conservation website includes tips on outdoor and indoor conservation, Xeriscape landscaping, irrigation regulations, and educational materials for youth.
- Printed brochures – The City provides the public with printed brochures on various topics ranging from Xeriscaping to indoor water conservation. They are produced by several entities, including the Water Department, the Texas Water Development Board, and Texas A&M AgriLife Extension and are available at multiple City locations and programs.
- School Education – Programs targeted to grade school children are explained in the School Education section (5.6.1).
- Xeriscape Learning Center and Design Garden – As part of the Corpus Christi Museum of Science and History, the Xeriscape Corpus Christi Steering Committee, in partnership with the City, maintains a Xeriscape demonstration garden with more than 100 plant varieties. Within the garden an educational gazebo, The Water Story Exhibit, showcases an 8-foot interactive topographic map of the Nueces River Basin. A second gazebo named the Learning Center features practical landscape ideas and photographs. Educational Walk 'n' Talk Tours are held annually to enhance public education.
- City Call Center and Request Line – The City's Call Center (361 826-CITY) was created to encourage customers to report water line breaks and to request service calls. Customers may also utilize a dedicated Water Hotline number (361 826-1600) to request water conservation kits and other information.

To track the progress and effectiveness of this educational effort, the Water Department collects and tracks the following information:

- Number of activities, pieces of information distributed, and number of customers at an activity or program;
- Number of public school children who received instruction in water resources or water conservation;

- Number of news programs or advertisements that featured the water conservation message and how many customers had the opportunity to receive each message;
- Total budget by category for public information; and
- Results of annual or biannual customer survey and/or focus groups to determine the reach and impact of the program.

Water savings due to public information efforts are difficult to quantify. Water savings for other public information programs that result in specific actions by customers, such as changes in irrigation scheduling or reduction in water waste occurrences, may be quantified through surveys or analysis of water waste reporting in future years.

5.7.3 Water-Wise Landscape Design and Conservation Program

The use of water for outdoor irrigation can often account for over 50% of a customer's consumption. The purpose of this program is to decrease both peak summertime water consumption and overall water use through the installation of water-wise landscapes at residential and commercial properties, and through improved efficiency of existing landscapes. Water-wise landscaping involves not only plant selection, but continued attention to appropriate irrigation and landscape maintenance. The program is multifaceted, implemented through a landscape standard (Section 5.4), school education (Section 5.7.1), public outreach (Section 5.7.2), and city-implemented measures (Section 5.6).

Below are some public-outreach programs explained in more detail that specialize in water-wise landscaping or emphasize the importance of using less outdoor water.

- *Xeriscape To-Go: Planning and Designing a Gardener's Dream* – This brochure, available in both print and online, was designed to educate local residents on the benefits of Xeriscape landscaping. It features a list of plants suitable for the Coastal Bend and an explanation of the seven principles of Xeriscaping.
- *Xeriscape: Landscape with Less Water* – A brochure detailing the seven principles of Xeriscape.
- Purple Water-Wise Plant Labels – A brochure produced in cooperation with Xeriscape Corpus Christi, commercial nurseries, and Texas A&M AgriLife Extension to bring public awareness to lists of plants that are proven performers in the Coastal Bend since 2004. Water-wise plants are labeled with purple tags at commercial nurseries for easy identification. Purple labels are affixed to water-wise and drought-tolerant plants offered at retail nurseries.

To encourage the seven principles of Xeriscape landscaping, the non-profit organization, Xeriscape Corpus Christi, was formed. The organization built and

maintains a demonstration Xeriscape garden at the Museum of Science and History. The steering committee's members include the City of Corpus Christi Water Department, Storm Water Department, Park and Recreation Department, Corpus Christi Museum of Science and History, Friends of the Museum, Mayor's Water Conservation Advisory Committee, Nueces County Master Gardeners, and Texas A&M AgriLife Extension of Nueces County.

5.8 Water Conservation Pricing

One of the most effective methods to influence water consumption is through changes in price structure. Water conservation pricing is a type of structure that promotes conservation by making the water rate higher as consumption increases. Another term for this type of structure is increasing block rate. The City has an increasing block rate structure for residential customers which is not “promotional.” It ensures that residents receive their most basic needed water at a reasonable price, which covers the fixed costs of the Water Department. They are billed on actual metered water use. As consumption goes into discretionary amounts, the price per gallon increases, resulting in a higher bill. A copy of the current water rate structure is attached as Appendix C.

At least annually, the Water Department staff will review consumption patterns (including seasonal use) and the income and expense levels to determine if the conservation rates are effective. They then make appropriate, regular rate structure adjustments as needed. In the past, such studies resulted in an elimination of the decreasing block rate for industrial accounts and increasing block rates for residential customers. In order to further encourage conservation, the Water Department will examine the follow potential pricing measures:

1. Seasonal rates to reduce peak demands during summer months.
2. Increasing block rates for other customer classes.
3. Restructuring of commercial rate structure to an increasing block rate.

The successful transition to a new rate structure will include public input and a process to educate the community about the new rate structure. Public involvement in the development and implementation of conservation rates helps to assure that the goals of the conservation pricing initiatives are met and accepted by local constituents. Public meetings, advisory groups, and public announcements are among ways to generate public involvement.

5.9 Coordination with Region N (Coastal Bend) Regional Water Planning Group

The service area of the City of Corpus Christi is located within the Coastal Bend, designated as Region N Planning area, and the City has provided a copy of its Water Conservation and Drought Contingency Plan to the Coastal Bend Regional Water Planning Group (RWPG). The Region N Planning Group was initially appointed by the Texas Water Development Board (TWDB), under the authority of Senate Bill 1, and includes representatives from 12 interests

including the public, counties, municipalities, industries, agriculture, the environment, small businesses, electric-generating utilities, port authorities, river authorities, water districts, and water utilities from across the region. This Plan is consistent with the City's role as a leader in water supply planning in Region N, and meets the standards for water conservation planning in TAC Chapter 288. The Water Department has coordinated with the RWPG through the following measures:

1. The City presented the changes in the 2013 Corpus Christi Water Conservation Plan to the Region N Water Planning Group on March 7, 2013 (Minutes from the Region N meetings can found at http://www.nueces-ra.org/CP/RWPG/minutes/index.php after the June 13, 2013 meeting.
2. City staff members (in addition to RWPG representative) attend Planning Group meetings on a regular basis;
3. City staff has made formal comments (at meetings and in writing) at various times regarding issues with population and water demand projections and with selection of water management strategies; and
4. The City has held numerous meetings with the RWPG consultant to address issues related to Corpus Christi and the regional planning process.

5.10 Method to Monitor the Effectiveness of Conservation Measures

The best way to monitor to the effectiveness of the conservation measures of this chapter is to track the per capita water use. As was mentioned in Chapter 4, the goal of this Plan is to reduce per capita water use (gcpd) by one percent each year over the next decade. Successful water conservation measures will result in a reduction of that per capita water use. Because water use can vary each year due to weather conditions, the City will consider rainfall amounts when analyzing water use.

5.11 Means of Implementation and Enforcement

This Water Conservation Plan was approved by the Corpus Christi City Council on May 28, 2013. The passage of this WCP provides the Water Department the authority and guidance to implement the included conservation measures and programs.

The Water Resource Management Ordinance provides the legal authority for the City of Corpus Christi to enforce certain conservation measures and all drought contingency measures. A copy of the Water Resource Management Ordinance (Section 55) is attached as a supporting document.

5.12 Reservoir System Operating Plan

Because all customers rely on the reservoir systems for their supplies, they are subject to the Reservoir Operating Plan. A copy of this is included in Appendix D.

6. Wholesale Customer Conservation

6.1 Introduction

The City of Corpus Christi serves five wholesale customers with treated water and six wholesale customers with raw water. The raw water is delivered to Corpus Christi's four municipal and two industrial customers. As part of the 2013 Water Conservation Planning Process, the City has organized and held meetings with the wholesale customers to receive feedback on the revised Plan. Because these customers use the same source water as the City, it is important that they are kept informed and provide input into the City's decision making processes.

This chapter explains the conservation goals that the City encourages its wholesale customers to adopt. Though wholesale customers outside of city limits are not legally bound by the ordinances of Corpus Christi, the City requires the wholesale customers to adopt conservation measures outlined in the Plan. It helps to ensure the region's water security and also ensures that customers, both inside and out of the City, are treated equitably. Section 6.5 explains the contractual requirements between the City and its wholesale customers.

6.2 Wholesale Customer Targets and Goals

The best way to reduce water waste and increase conservation is to set targets and goals. As was mentioned in Chapter 4, the City of Corpus Christi has set a water conservation goal of one percent annual reduction in consumption. This amounts to 202 gcpd in 2022. The City, though it has no authority to require it, suggests to each its wholesale customers to also try to achieve a one percent annual reduction in consumption. The Coastal Bend Regional Water Planning Group recommends consumption reductions and they are shown below in Table 6.1. The gcpd of each wholesale customer is shown with the 2020 and 2060 consumption goals. Though the group's targets are not as aggressive as the City's, they still help in conserving the region's water supplies.

Table 6.1 Wholesale Customer Consumption and Goals of Regional Water Planning Group (gcpd)

Wholesale Customer	2000 Consumption	2020 Consumption Goals	2060 Consumption Goals
Alice Water Authority	248	241	234
Beeville Water Supply District	172	168	157
City of Mathis	119	112	104
Nueces County WCID 4 (Port Aransas)	187	179	177
San Patricio Municipal Water District	118	111	**
South Texas Water Authority	155	152	**

Violet Water Supply Corporation	**151**	**148**	****
Wholesale customers Celanese and Flint Hills Resources do not serve a “population” so are not included in this table. **These values were not calculated in the 2011 Regional Water Plan, so are not available.			

6.3 Metering, Monitoring, and Records Management

The City meters all water diverted from the raw water supply to its wholesale customers. The City also meters all treated water delivered to its wholesale customers. By contrast, these meters are calibrated on a semiannual basis, and must be accurate within 2 percent. The meters are read on a monthly basis for billing purposes.

A summary report is prepared, which aggregates all meter readings from wholesale raw water meters, wholesale treated water meters, and all retail customers, as well as the readings from the meters at the intake to the O. N. Stevens Water Treatment.

6.4 Leak Detection and Repair

The treated water wholesale customers are supplied from portions of the City's distribution system. The meter location is the point of sale at which the water enters the customer's system. From there, it is the customer's responsibility to operate and maintain. The portions of the City's distribution system that serve these wholesale customers are subject to the same leak detection and repair program described Section 5.4.5, System Water Audit and Water Loss.

All raw water delivery systems to the wholesale customers are owned and operated by those customers. Therefore, they are responsible for any leak detection and repair programs as well as for unaccounted-for water. Wholesale customers are encouraged to voluntarily report their results to the City in order to promote cooperative efficiency efforts.

In addition, wholesale customers are encouraged to keep their water loss rates below ten percent.

6.5 Contractual Requirements

The City has in place valid contracts with various wholesale customers including raw water contracts with municipal water suppliers: Alice Water Authority, Beeville Water Supply District, City of Mathis, and San Patricio Municipal Water District. Treated water customers include Nueces County Water Improvement District No. 4 (Port Aransas), San Patricio Municipal Water District, South Texas Water Authority, and the Violet Water Supply Corporation. Industrial wholesale customers include Celanese and Flint Hills Resources. All of these contracts contain language related to water use restrictions in drought situations. Each contract has a section

requiring the customer to accept shortages in supply, should natural or unforeseen circumstances prevent the City from delivering the water. With the exceptions of the Beeville Water Supply District and San Patricio Municipal Water District contracts, the contracts further stipulate that should there be a shortage in the basic supply of water which requires the restriction or curtailing of any consumer of water within the city limits of Corpus Christi, *that the wholesale customer limit and restrict all of its customers to the same extent.*

The Beeville Water Supply District requires the district to reduce its average raw water consumption by specific percentages whenever the City declares water shortage conditions. The district is required to reduce its average raw water consumption by 10% when the reservoirs fall below 50% (Stage 1), 20% when the reservoirs fall below 40% (Stage 2), 30% when the reservoirs fall below 30% (Stage 3), and to cease raw water withdrawals when reservoir storage levels drop below 20% (Stage 4). In exchange, the District is excused from contract minimum payments during the time of shortage; and it has the discretion to supplement river water with groundwater in lieu of imposing water use restrictions on its customers.

The San Patricio Municipal Water District has the discretion to either implement water conservation and drought measures similar to those imposed by the City or to reduce the water it takes from the City's water supply system. If the district elects to reduce the amount of water it takes from the City's water supply system, the reductions are based on the average deliveries for the same month of the year over the three previous years. The percent of the reduction is based on the available water in the City's reservoir system. The required decrease in the amount of water that can be taken is 10% when the reservoirs fall below 50% (Stage 1), 20% when the reservoirs fall below 40% (Stage 2), 30% when the reservoirs fall below 30% (Stage 3), and 60% when the reservoirs fall below 20% (Stage 4). In the most recent contract with San Patricio Municipal Water District, language concerning year-round water conservation is included. As the need to renegotiate other contracts arises, the City will include contract language requiring conformance with applicable state and federal regulations concerning water conservation.

The City will require in every wholesale water supply contract entered into or renewed after official adoption of this Plan (by either ordinance, resolution, or tariff), including any contract extension, that each successive wholesale customer develop and implement a water conservation plan and drought contingency plan or water management measures using the applicable elements in this Plan and City’s Drought Contingency Plan (City Ordinance 55-151). If the customer intends to resell the water, the contract between the initial supplier and customer must provide that the contract for the resale of the water must have water conservation and drought contingency requirements so that each successive customer in the resale of the water will be required to implement water conservation measures and drought contingency measures in accordance with the provisions of this Plan and the Drought Contingency Plan.

6.6 Reservoir System Operating Plan

Because all of the wholesale customers rely on the reservoir systems for their supplies, they are subject to the Reservoir Operating Plan. A copy of this is included in Appendix D.

UTILITY PROFILE

Fill out this form as completely as possible.
If fields do not apply to your entity, leave them blank.

CONTACT INFORMATION

Name of Utility: City of Corpus Christi Water Department

Public Water Supply Identification Number (PWS ID): 1780003

CCN Number: 10554

Water Rights ID Number: 21-3214; 21-2464; 14-5434

Wastewater ID Number: CN600131858

Check all that apply:

- [x] Retail Water Supplier
- [x] Wholesale Water Supplier
- [x] Wastewater Treatment Utility

Address: P.O. Box 9277 City: Corpus Christi Zip Code: 78469-972

Email: gustavogo@cctexas.com Telephone Number: 361-826-1874

Regional Water Planning Group: N Map

Groundwater Conservation District: 18 Map

Completed By: Brent Clayton Title: Water Resource Planner

Date: 3/13/2013

Check all that apply:

- [ ] Received financial assistance of $500,000 or more from TWDB
- [x] Have 3,300 or more retail connections
- [x] Have a water right with TCEQ

Section I: Utility Data

A. Population and Service Area Data

1. Current service area size in square miles: 140
(Attach or email a copy of the service area map.)

2. Provide historical service area population for the previous five years, starting with the most current year.

Year	Historical Population Served By Retail Water Service	Historical Population Served By Wholesale Water Service	Historical Population Served By Wastewater Service
2008	297,447	432,890	297,447
2009	297,447	433,716	297,447
2010	305,215	442,324	305,215
2011	307,728	446,212	307,728
2012	312,065	451,944	312,065

3. Provide the projected service area population for the following decades.

Year	Projected Population Served By Retail Water Service	Projected Population Served By Wholesale Water Service	Projected Population Served By Wastewater Service
2020	356,123	531,843	356,123
2030	391,077	583,752	391,077
2040	412,761	628,161	412,761
2050	448,879	666,843	448,879
2060	470,523	697,732	470,523

4. Describe the source(s)/method(s) for estimating current and projected populations.

Historical population served by retail water was gathered from City of Corpus Christi staff and 2010 Census data.
Historical population served by wholesale water service was calculated using 2010 Census values and percentage growth values from the Regional N Water Plan.
Historical population served by wastewater service is the same as retail water.
Projected Population Served by Retail Water Service gathered from 2010 Coastal Bend Regional Water Plan, Table 2-2.
Projected Population Served by Wholesale Water Service - Summed projected population of each community served, from Region N Plan, Table 2-2.

B. System Input

Provide system input data for the previous five years.

Total System Input = Self-supplied + Imported – Exported

Year	Self-supplied Water in Gallons	Purchased/Imported Water in Gallons	Exported Water in Gallons	Total System Input
2008	23,883,000,000	13,968,000,000	11,170,000,000	26,681,000,000
2009	28,593,000,000	11,862,000,000	11,183,000,000	29,272,000,000
2010	19,562,000,000	12,997,000,000	6,821,000,000	25,738,000,000
2011	29,847,000,000	9,949,000,000	10,969,000,000	28,827,000,000
2012	24,521,000,000	12,230,000,000	9,577,000,000	27,174,000,000

C. Water Supply System (Attach description of water system)

1. Designed daily capacity of system 161,000,000 **gallons** per day
2. Storage Capacity:
   Elevated 5,000,000 **gallons**
   Ground 55,150,000 **gallons**

3. List all current water supply sources in gallons:

Water Supply Source	Source Type*	Total Gallons
Lake Corpus Christi	Surface water	83,824,842,826
Choke Canyon Reservo	Surface water	226,555,475,060
Lake Texana	Contract	13,633,605,840
	Select	
	Select	
	Select	

*Select one of the following source types: *Surface water, Groundwater, or Contract*

4. If surface water is a source type, do you recycle backwash to the head of the plant?
   (●) Yes 7,500,000 estimated **gallons** per day
   ( ) No

D. Projected Demands

1. Estimate the water supply requirements for the next ten years using population trends, historical water use, economic growth, etc.

Year	Population	Water Demands (gallons)
2013	455,151	41,000,000,000
2014	465,390	42,222,557,942
2015	475,858	43,085,740,913
2016	486,563	48,030,317,189
2017	497,508	52,009,904,031
2018	508,699	52,525,948,530
2019	520,142	53,048,185,563
2020	531,843	53,576,689,440
2021	543,543	54,111,535,364
2022	555,502	54,652,799,439

2. Describe sources of data and how projected water demands were determined. Attach additional sheets if necessary.

The population projection is for the REGION. It was determined by using the 2012 population and 2020 projection to calculate an annual growth rate of 2.2%.

The water demands for the region were calculated by using the same percentage growth from population projections (2.2%) and subtracting 1% for conservation goals. This equates to 1.2% annual growth in demand, primarily municipal. In addition to that regular municipal growth, demand from nine potential industrial customers was added in years 2014-2017. The additional demand from new industry is approximately:
Year
2014: 730,557,942 gal
2015: 365,278,971 gal
2016: 4,440,697,428 gal
2017: 3,469,661,448 gal

E. High Volume Customers

1. If applicable, list the annual water use for the five highest volume **RETAIL customers**. Select one of the following water use categories to describe the customer; choose Residential, Industrial, Commercial, Institutional, or Agricultural.

Retail Customer	Water Use Category*	Annual Water Use	Treated or Raw
Valero Refining	Industrial	2,237,220,000	Treated
Lyondell Chemical Co.	Industrial	1,863,461,000	Treated
Koch Refining	Industrial	1,706,661,000	Treated
Koch Refining	Industrial	831,590,000	Treated
Calpine	Industrial	559,130,000	Treated

*For definitions on recommended customer categories for classifying customer water use, refer to the Guidance and Methodology for Reporting on Water Conservation and Water Use.

2. If applicable, list the annual water use for the five highest volume **WHOLESALE customers**. Select one of the following water use categories to describe the customer; choose Municipal, Industrial, Commercial, Institutional, or Agricultural.

Wholesale Customer	Water Use Category*	Annual Water Use	Treated or Raw
San Patricio Municipal Wat	Select	7,503,168,000	Raw
City of Alice	Select	2,362,228,000	Raw
City of Beeville	Select	1,314,951,000	Raw
South Texas Water Autority	Select	549,350,000	Treated
Neuces Co. WCID #4	Select	497,305,000	Treated

*For definitions on recommended customer categories for classifying customer water use, refer to the Guidance and Methodology for Reporting on Water Conservation and Water Use.

Section II: Retail System Data

If you do not provide retail water, go to Section III.

A. Retail Connections

1. List the active retail connections by major water use category.

Water Use Category*	Active Retail Connections		
	Metered	Unmetered	Total Connections
Residential - Single Family	81,000	0	81,000
Residential – Multi-family (units)	979	0	979
Industrial	18	0	18
Commercial	2,181	0	2,181
Institutional	1,137	0	1,137
Agricultural	0	0	0
TOTAL	85,315	0	85,315

*For definitions on recommended customer categories for classifying customer water use, refer to the Guidance and Methodology for Reporting on Water Conservation and Water Use.

2. List the net number of new retail connections by water use category for the previous five years.

Water Use Category*	Net Number of New Retail Connections				
	2008	2009	2010	2011	2012
Residential - Single Family	1,000	423	263	568	1,048
Residential – Multi-family (units)	33	581	86	50	-47
Industrial	-17	-6	0	7	-6
Commercial	79	-636	-142	132	129
Institutional	7	59	-39	14	-19
Agricultural	0	0	0	0	0
TOTAL	1,102	421	168	771	1,105

*For definitions on recommended customer categories for classifying customer water use, refer to the Guidance and Methodology for Reporting on Water Conservation and Water Use.

B. Retail Water Accounting Data - Water Use Categories

For the previous five years, enter the number of gallons of RETAIL water provided in each major water use category.

Water Use Category*	Total Gallons of Retail Water				
	2008	2009	2010	2011	2012
Residential - Single Family	7,274,661,000	7,860,176,000	6,428,436,00	7,802,013,000	6,938,500,00
Residential – Multi-family	1,266,031,000	1,727,963,000	1,706,633,00	1,792,103,000	1,777,047,00
Industrial	11,215,108,00	10,629,910,00	10,291,335,0	104,444,590,0	11,191,421,0
Commercial	4,395,903,000	3,636,586,000	3,429,079,00	3,869,811,000	3,744,294,00
Institutional	838,281,000	1,113,207,000	1,022,418,00	1,170,878,000	997,626,000
Agricultural	0	0	0	0	0
TOTAL	24,989,984,00	24,967,842,00	22,877,901,0	119,079,395,0	24,648,888,0

*For definitions on recommended customer categories for classifying customer water use, refer to the Guidance and Methodology for Reporting on Water Conservation and Water Use.

C. Retail Water Accounting Data - Annual and Seasonal Use

For the previous five years, enter the number of gallons provided to RETAIL customers.

TREATED

	2008	2009	2010	2011	2012
January	1,705,178,000	1,611,643,000	1,391,348,000	1,511,280,000	1,662,045,000
February	1,595,165,000	1,640,234,000	1,470,857,000	1,724,705,000	1,619,771,000
March	1,723,181,000	1,916,407,000	1,713,651,000	1,708,092,000	1,543,683,000
April	1,967,995,000	2,065,702,000	1,782,504,000	1,939,644,000	2,054,751,000
May	2,363,196,000	2,109,063,000	1,915,393,000	2,164,708,000	2,211,578,000
June	2,279,660,000	2,456,525,000	1,939,886,000	2,138,681,000	2,125,106,000
July	1,989,159,000	2,482,952,000	1,919,630,000	2,279,337,000	2,353,010,000
August	2,319,544,000	2,195,283,000	2,027,583,000	2,432,124,000	2,315,491,000
September	1,793,681,000	1,745,541,000	1,612,313,000	2,067,756,000	2,079,607,000
October	1,838,550,000	1,664,219,000	2,045,253,000	1,870,060,000	1,806,203,000
November	1,682,971,000	1,624,329,000	1,754,376,000	1,684,505,000	1,833,606,000
December	1,736,200,000	1,549,330,000	1,609,584,000	1,727,493,000	1,766,517,000
TOTAL	22,994,480,000	23,061,228,000	21,182,378,000	23,248,385,000	23,371,368,000

RAW

	2008	2009	2010	2011	2012
January	184,547,000	162,466,000	96,266,000	142406000	124,872,000
February	180,547,000	150,101,000	76,936,000	129,606,000	121,931,000
March	174,000,000	156,213,000	170,231,000	137,145,000	156,124,000
April	136,035,000	184,426,000	128,195,000	155,815,000	104,726,000
May	200,670,000	174,190,000	175,164,000	165,362,000	57,205,000
June	181,369,000	178,229,000	159,264,000	182,150,000	69,286,000
July	188,869,000	196,160,000	149,023,000	186,308,000	74,054,000
August	174,305,000	166,261,000	177,803,000	172,425,000	81,272,000
September	190,665,000	142,209,000	105,001,000	137,612,000	105,151,000
October	176,652,000	152,832,000	153,880,000	148,987,000	154,002,000
November	153,705,000	125,789,000	143,971,000	143,022,000	105,173,000
December	154,140,000	117,639,000	159,789,000	130,041,000	123,724,000
TOTAL	2,095,504,000	1,906,515,000	1,741,663,000	1,830,879,000	1,277,520,000

RETAIL	2008	2009	2010	2011	2012	**Average in Gallons**
Summer Retail (Treated + Raw)	7,132,906,0	7,675,41(	6,373,189,0	7,391,025,0	7,018,219,0	7,118,149,800 / 5yr Average
TOTAL Retail (Treated + Raw)	25,089,984,	24,967,7(	22,924,041,	25,079,264,	24,648,888,	24,541,984,000 / 5yr Average

D. Water Loss

Provide Water Loss Data for the previous five years.

Water Loss GPCD = [Total Water Loss in Gallons ÷ Permanent Population Served] ÷ 365

Water Loss Percentage = [Total Water Loss ÷ Total System Input] x 100

Year	Total Water Loss in Gallons	Water Loss in GPCD	Water Loss as a Percentage
2008			0%
2009			0%
2010	1,338,416,000		5%
2011	945,865,000		3%
2012	1,893,644,000	17	7%
5-year average	835,585,000	3	3%

E. Peak Day Use

Provide the Average Daily Use and Peak Day Use for the previous five years.

Year	Average Daily Use (gal)	Peak Day Use (gal)	tŜl·ļ Cl·ŏűƨ₪
2008	73,098,630	97,850,000	1.34
2009	80,197,260	96,220,000	1.20
2010	70,515,068	83,960,000	1.19
2011	78,978,082	98,830,000	1.25
2012	74,449,315	103,500,000	1.39

Section III: Wholesale System Data

If you do not provide wholesale water, go to Section IV.

A. Wholesale Connections

1. List the active wholesale connections by major water use category.

Water Use Category*	Active Wholesale Connections		
	Metered	Unmetered	Total Connections
Municipal	9	0	9
Industrial	0	0	0
Commercial	0	0	0
Institutional	0	0	0
Agricultural	0	0	0
TOTAL	9	0	9

*For definitions on recommended customer categories for classifying customer water use, refer to the Guidance and Methodology for Reporting on Water Conservation and Water Use.

2. List the net number of new wholesale connections by water use category for the previous five years.

Water Use Category*	Net Number of New Wholesale Connections				
	2008	2009	2010	2011	2012
Municipal	1	0	1	0	0
Industrial	0	0	0	0	0
Commercial	0	0	0	0	0
Institutional	0	0	0	0	0
Agricultural	0	0	0	0	0
TOTAL	1	0	1	0	0

*For definitions on recommended customer categories for classifying customer water use, refer to the Guidance and Methodology for Reporting on Water Conservation and Water Use.

B. Wholesale Water Accounting Data - Water Use Categories

For the previous five years, enter the number of gallons of WHOLESALE water exported (*sold or transferred*) to each major water use category.

Customer Category*	Total Gallons of Wholesale Water				
	2008	2009	2010	2011	2012
Municipal	12,139,165,(	12,881,134,	10,077,873,0(	13,985,222,0(	12,872,880,0(
Industrial					
Commercial					
Institutional					
Agricultural					
TOTAL	12,139,165,(	12,881,134,	10,077,873,0(	13,985,222,0(	12,872,880,0(

*For definitions on recommended customer categories for classifying customer water use, refer to the Guidance and Methodology for Reporting on Water Conservation and Water Use.

C. Wholesale Water Accounting Data - Annual and Seasonal Use

For the previous five years, enter the number of gallons exported (*sold or transferred*) to WHOLESALE customers.

TREATED

	2008	2009	2010	2011	2012
January	156,036,000	163,398,000	139,053,000	125,804,000	140,348,000
February	147,242,000	167,103,000	103,230,000	147,113,000	124,898,000
March	150,369,000	178,741,000	157,652,000	171,023,000	192,433,000
April	185,119,000	203,186,000	128,302,000	293,961,000	119,278,000
May	187,865,000	213,432,000	224,211,000	126,365,000	131,363,000
June	204,434,000	259,289,000	216,823,000	216,230,000	132,691,000
July	207,798,000	295,011,000	200,233,000	243,039,000	106,542,000
August	181,726,000	286,514,000	226,918,000	238,534,000	121,995,000
September	176,021,000	177,458,000	216,989,000	222,656,000	74,467,000
October	174,066,000	174,148,000	168,765,000	202,247,000	133,888,000
November	164,012,000	149,933,000	149,667,000	182,775,000	43,383,000
December	148,336,000	161,285,000	163,231,000	138,335,000	62,779,000
TOTAL	2,083,024,000	2,429,498,000	2,095,074,000	2,308,082,000	1,384,065,000

RAW

	2008	2009	2010	2011	2012
January	747,373,000	773,039,000	636,782,000	722,659,000	933,462,000
February	836,069,000	724,658,000	506,561,000	621,342,000	571,041,000
March	760,960,000	845,572,000	879,568,000	1,352,647,000	745,128,000
April	800,326,000	964,408,000	670,209,000	515,765,000	931,564,000
May	900,475,000	878,828,000	807,813,000	954,518,000	812,428,000
June	1,092,487,000	1,108,488,000	714,347,000	1,119,197,000	1,149,667,000
July	907,435,000	1,259,795,000	617,645,000	1,193,283,000	1,030,782,000
August	881,319,000	1,047,826,000	719,526,000	1,352,491,000	1,336,807,000
September	739,859,000	806,000,000	605,666,000	1,130,371,000	1,245,427,000
October	924,450,000	755,351,000	562,124,000	1,062,881,000	880,124,000
November	793,863,000	754,721,000	652,893,000	844,904,000	1,053,925,000
December	671,343,000	532,941,000	609,665,000	807,082,000	798,460,000
TOTAL	10,055,959,000	10,451,627,000	7,982,799,000	11,677,140,000	11,488,815,000

WHOLESALE	2008	2009	2010	2011	2012	**Average in Gallons**
Summer Wholesale (Treated + Raw)	3,475,199,0	4,256,923	2,695,492,0	4,362,774,(	3,878,484,(	3,733,774,400 5yr Average
TOTAL Wholesale (Treated + Raw)	12,138,983,	12,881,12	10,077,873,	13,985,222,	12,872,88(	12,391,216,600 5yr Average

D. Water Loss

Provide Water Loss Data for the previous five years.

Water Loss GPCD = [Total Water Loss in Gallons ÷ Permanent Population Served] ÷ 365

Water Loss Percentage = [Total Water Loss ÷ Total System Input] x 100

Year	Total Water Loss in Gallons	Water Loss in GPCD	Water Loss as a Percentage
2008			0%
2009			0%
2010			0%
2011			0%
2012			0%
5-year average	0	0	0%

E. Peak Day Use

Provide the Average Daily Use and Peak Day Use for the previous five years.

Year	Average Daily Use (gal)	Peak Day Use (gal)	tŜl·ļ Cl·ŏűƨ₪
2008	73,098,630		0.00
2009	80,197,260		0.00
2010	70,515,068		0.00
2011	78,978,082		0.00
2012	74,449,315		0.00

Section IV: Wastewater System Data

If you do not provide wastewater system services then you have completed the Utility Profile. Save and Print this form to submit with your Plan. Continue with the Water Conservation Plan Checklist to complete your Water Conservation Plan.

A. Wastewater System Data (Attach a description of your wastewater system)

1. Design capacity of wastewater treatment plant(s): 42,700,000 **gallons** per day.
2. Provide data on the types of recycling and reuse activities implemented during the current reporting period.

	Total Annual Volume (in gallons)
On-site irrigation	
Plant wash down	
Chlorination/de-chlorination	
Industrial	
Landscape irrigation (parks, golf courses)	456,000,000
Agricultural	
Discharge to surface water	
Evaporation pond	456,000,000

3. Could treated wastewater be substituted for potable water?
   ○ Yes ◉ No

B. Wastewater Data for Service Area

1. Percent of water service area served by wastewater system: 99 %
2. Monthly treated wastewater volume in gallons, for the previous five years.

	2008	2009	2010	2011	2012
January	844,794,000	797,073,000	983,432,000	903,991,000	762,135,000
February	767,407,000	729,539,000	1,024,434,000	824,264,000	776,272,000
March	845,987,000	808,465,000	880,390,000	811,053,000	788,485,000
April	835,953,000	787,865,000	825,083,000	761,910,000	796,530,000
May	854,626,000	826,535,000	828,120,000	812,386,000	847,044,000
June	814,734,000	794,940,000	846,968,000	782,970,000	792,510,000
July	966,682,000	828,763,000	963,373,000	799,490,000	821,469,000
August	932,520,000	825,497,000	854,765,000	800,327,000	817,563,000
September	865,137,000	887,930,000	1,252,114,000	747,780,000	816,630,000
October	845,260,000	878,410,000	869,442,000	774,194,000	795,522,000
November	786,877,000	897,954,000	804,930,000	742,290,000	749,460,000
December	803,557,000	995,703,000	798,343,000	779,433,000	766,041,000
TOTAL	10,163,534,000	10,058,674,000	10,931,394,000	9,540,088,000	9,529,661,000

You have completed the Utility Profile. Save and Print this form to submit with your Plan.
Continue with the Water Conservation Plan Checklist to complete your Water Conservation Plan.

TEXAS NATURAL RESOURCE CONSERVATION COMMISSION

AN AGREED ORDER Amending the operational procedures and continuing an Advisory Council pertaining to Special Condition 5.B., Certificate of Adjudication No. 21-3214; Docket No. 2001-0230-WR

On April 4, 2001, came to be considered before the Texas Natural Resource Conservation Commission ("Commission") the Motion by the City of Corpus Christi and Nueces River Authority for the adoption of an amendment to the Agreed Order issued April 28, 1995, establishing operating procedures pertaining to Special Condition 5.B., Certificate of Adjudication No. 21-3214, held by the City of Corpus Christi, the Nueces River Authority, and the City of Three Rivers" (the two cities and river authority shall be referred to herein as "Certificate Holders"). The Certificate Holders and the Executive Director of the Texas Natural Resource Conservation Commission have agreed to the provisions of this Agreed Order.

The City of Corpus Christi (managing entity) requests that Section 2 of this Agreed Order be amended to add further detail to the provisions regarding the use of water for bays and estuaries and to make changes in the required passage of inflows for the bays and estuaries automatic at 40 percent and 30 percent of total reservoir system capacity upon institution of mandatory outdoor watering restrictions. Additionally, Certificate Holders request the most recent bathymetric surveys be used for determining reservoir system storage capacity. The Certificate Holders request details be added regarding provisions for two projects to enhance/augment the amount of freshwater going into the receiving estuary and timelines for those projects.

After considering the proposals and the presentations of the parties, the Commission finds that it has authority to establish operational procedures under Special Condition 5.B. of Certificate of Adjudication No. 21-3214, and that operational procedures previously established should be amended. The Commission finds that, because of the need to continue to monitor the ecological environment and health of related living marine resources of the estuaries to assess the effectiveness of freshwater inflows provided by requirements contained in this Agreed Order relating to releases and spills from Choke Canyon Reservoir and Lake Corpus Christi (collectively referred to as the Reservoir System), as well as return flows, and to evaluate potential impacts which may occur to the reservoirs as well as to the availability of water to meet the needs of the Certificate Holders and their customers which may result from those operational procedures, the existing advisory council should be maintained to consider such additional information and related issues and to formulate recommendations for the Commission's review.

The Commission additionally finds that based on the preliminary application of the Texas Water Development Board's Mathematical Programming Optimization Model, (GRG-2), 138,000 acre-feet of fresh water is necessary to achieve maximum harvest in the Nueces Estuary; and, therefore, when water is impounded in the Lake Corpus Christi-Choke Canyon Reservoir System to the extent greater than 70 percent of the system's storage capacity, the delivery of 138,000

acre-feet of water to Nueces Bay and/or the Nueces Delta, by a combination of releases and spills, together with diversions and return flows noted below, should be accomplished; and that during periods when the reservoir system contains less than 70 percent storage capacity, reductions in releases and spills, along with diversions and return flows, are appropriate in that a satisfactory level of marine harvest will be sustained and the ecological health of the receiving estuaries will be maintained.

The Commission finds that return flows, other than to Nueces Bay and/or the Nueces Delta, that are delivered to Corpus Christi Bay and other receiving estuaries are currently in the assumed amount of 54,000 acre-feet per annum (per calendar year), and that they shall be credited at this amount until such time as it is shown that actual return flows to Corpus Christi Bay and other receiving estuaries exceed 54,000 acre-feet per annum.

The Commission finds that by contractual relationships, the City of Corpus Christi is the managing entity for operating the Reservoir System.

The Commission finds that the Motion by the City of Corpus Christi and Nueces River Authority to Amend this Agreed Order is reasonable and should be granted. Benefits of the proposed diversion project and operating changes will include increased water supply, increased reservoir storage levels, increased positive flow events for Rincon Bayou and the upper Nueces Delta, increased sources of nitrogen for the upper delta, and lower salinity levels in the upper delta.

When the Commission uses the word "release" in this Order, release means spills, inflow passage, intentional releases, and return flows; provided, however, under this Order no release from storage is required to meet conditions of this Order.

By consenting to the issuance of this Agreed Order, no party admits or denies any claim, nor waives with respect to any subsequent proceeding any interpretation or argument which may be contrary to the provisions of this Agreed Order.

NOW, THEREFORE, BE IT ORDERED BY THE TEXAS NATURAL RESOURCE CONSERVATION COMMISSION THAT:

1. a. The City of Corpus Christi, as operator of the Choke Canyon/Lake Corpus Christi reservoirs (the "Reservoir System"), shall provide not less than 151,000 acre-feet of water per annum (per calendar year) for the estuaries by a combination of releases and spills from the Reservoir System at Lake Corpus Christi Dam and return flows to Nueces and Corpus Christi Bays and other receiving estuaries (including such credits as may be appropriate for diversion of river flows and/or return flows to the Nueces Delta and/or Nueces Bay), as computed and to the extent provided for herein.

   b. When water impounded in the Reservoir System is greater than or equal to 70 percent of storage capacity, a target amount of 138,000 acre-feet is to be delivered to Nueces Bay and/or the Nueces Delta by a combination of releases and spills from

the Reservoir System as well as diversions and return flows. In accordance with the monthly schedule and except as provided otherwise in this Agreed Order, target inflows to Nueces Bay and/or the Nueces Delta shall be in the acre-foot amounts as follow:

January	2,500	July	6,500
February	2,500	August	6,500
March	3,500	September	28,500
April	3,500	October	20,000
May	25,500	November	9,000
June	25,500	December	4,500

It is expressly provided, however, that releases from Reservoir System storage shall not be required to satisfy the above targeted inflow amounts, as calculated in Subparagraph d.

c. When water impounded in the Reservoir System is less than 70 percent but greater than or equal to 40 percent of storage capacity, a targeted amount of 97,000 acre-feet is to be delivered to Nueces Bay and/or the Nueces Delta by a combination of releases and spills from the Reservoir System as well as diversions and return flows. In accordance with the monthly schedule and except as provided otherwise in this Agreed Order, target inflows to Nueces Bay and/or the Nueces Delta shall be in the acre-foot amounts as follows:

January	2,500	July	4,500
February	2,500	August	5,000
March	3,500	September	11,500
April	3,500	October	9,000
May	23,500	November	4,000
June	23,000	December	4,500

It is expressly provided, however, that releases from Reservoir System storage shall not be required to satisfy the above targeted inflow amounts as calculated in Subparagraph d.

d. The amounts of water required in subparagraphs 1.b. and 1.c. will consist of return flows, and intentional diversions, as well as spills and releases from the Reservoir System as defined in this subparagraph. For purposes of compliance with monthly targeted amounts prescribed above, the spills and releases described in this paragraph shall be measured at the U.S. Geological Survey stream monitoring station on the Nueces River at Calallen, Texas (USGS Station No. 08211500). Any inflows, including measured wastewater effluent and rainfall runoff meeting lawful discharge standards which are intentionally diverted to the upper Nueces Delta region, shall be credited toward the total inflow amount delivered to Nueces Bay and/or the Nueces

Delta. Inflow passage from the Reservoir System for the purpose of compliance with the monthly targeted amounts prescribed in subparagraphs 1.b. and 1.c. shall in no case exceed the estimated inflow to Lake Corpus Christi as if there were no impoundment of inflows at Choke Canyon Reservoir. The estimated inflow to Lake Corpus Christi as if there were no impoundment of inflows at Choke Canyon Reservoir shall be computed as the sum of the flows measured at the U.S. Geological Survey (USGS) STREAMFLOW GAGING STATIONS ON THE Nueces River near Three Rivers (USGS No. 08210000), Frio River at Tilden, Texas (USGS No. 08206600), and San Miguel Creek near Tilden, Texas (USGS No. 08206700) less computed releases and spills from Choke Canyon Reservoir.

e. The passage of inflow necessary to meet the monthly targeted allocations may be distributed over the calendar month in a manner to be determined by the City. Relief from the above requirements shall be available under subparagraphs (1) or (2) below and Section 2.(b) and 3.(c) at the option of the City of Corpus Christi. However, passage of inflow may only be reduced under one of those subparagraphs below, for any given month.

(1) Inflows to Nueces Bay and/or the Nueces Delta in excess of the required monthly targeted amount may be credited for up to fifty (50) percent of the targeted requirement for the following month, based on the amount received.

(2) When the mean salinity in Upper Nueces Bay (Lat. 27°51'02", Long. 97°28'52") for a 10-day period, ending at any time during the calendar month for which the reduction of the passage of inflow is sought, is below the SUB*, pass through of inflow from the reservoir system for that same calendar month may be reduced as follows:

(a) For any month other than May, June, September and October, if 5 parts per thousand (ppt) below the SUB for the month, a reduction of 25% of the current month's targeted Nueces Bay inflow;

(b) If 10 ppt below the SUB for the month, a reduction of 50 % of the current month's targeted Nueces Bay inflow except that credit under this provision is limited to 25 % during the months of May, June, September and October;

* "SUB" means "salinity upper bounds" as set forth more specifically in Section 3.b.

(c) If 15 ppt below the SUB for that month, a reduction of 75% of the current month's targeted Nueces Bay inflow.

f. The City of Corpus Christi shall submit monthly reports to the Commission containing daily inflow amounts provided to the Nueces Estuary in accordance with this Agreed Order through releases, spills, return flows and other freshwater inflows.

2. a. Certificate holders are to provide in any future contracts or any amendments, modifications or changes to existing contracts the condition that all wholesale customers and any subsequent wholesale customers shall develop and have in effect a water conservation and drought management plan consistent with Commission rule. The City of Corpus Christi shall solicit from its customers and report to the Commission annually the result of conservation under the City's plan, the customers' plans, and the feasibility of implementing conservation plans and programs for all users of water from the reservoir system. This report shall be submitted with the Certificate Holder's annual water use report as provided by 31 T.A.C. §295.202.

b. The Certificate Holders may reduce targeted Nueces Bay inflows during times of prolonged drought in accordance with this subparagraph 2.

(1) When the combined storage in the Choke Canyon/Lake Corpus Christi reservoir system (Reservoir System Storage) falls below 50% of the total system storage capacity, the City of Corpus Christi shall issue public notice advising and informing the water users of the region of voluntary conservation measures that are requested immediately and required drought management measures to be taken should the Reservoir System Storage fall to under 40% and/or 30% of total system storage capacity. To the extent of its legal authority, the City of Corpus Christi shall require its wholesale customers to issue public notice advising and informing the water users of the region of voluntary conservation measures that are requested immediately and required drought management measures to be taken should the Reservoir System Storage fall to under 40% and/or 30% of total system storage capacity.

(2) In any month when Reservoir System Storage is less than 40%, but equal to or greater than 30% of total system storage capacity, the City of Corpus Christi shall implement time of day outdoor watering restrictions and shall reduce targeted inflows to Nueces Bay to 1,200 acre-feet per month (1,200 acre-feet per month represents the quantity of water that is the median inflow into Lake Corpus Christi during the drought of record). Time of day outdoor watering restrictions prohibit lawn watering between the hours of 10:00 o'clock a.m. and 6:00 o'clock p.m. and are subject to additional conditions as described in the City of Corpus Christi's approved "Water Conservation and Drought Contingency Plan ("Plan")." To the extent of its legal authority, the City of Corpus Christi shall require its wholesale customers to implement time of day outdoor watering restrictions similar to those of the City.

(3) In any month when Reservoir System Storage is less than 30% of total system storage capacity, the City of Corpus Christi shall implement a lawn watering schedule in addition to time of day outdoor watering restrictions (see subparagraph 2.b.(2)) and shall suspend the passage of inflow from the Reservoir System for targeted inflows to Nueces Bay. However, return flows directed into Nueces Bay and/or the Nueces Delta shall continue. The lawn watering schedule shall allow customers to water lawns no oftener than every five days, subject to the time of day restrictions described in subparagraph 2.b.(2) and any additional conditions as described in the City's Plan.

(4) Certificate Holders' may implement whole or partial suspension of the passage of inflow through the reservoir as described above when the City implements, and requires its customers to implement, water conservation and drought management measures at diminished Reservoir System levels, as set forth in subparagraphs b.(2) and b.(3).

c. For purposes of this Agreed Order, Reservoir System storage capacity shall be determined by the most recently completed bathymetric survey of each reservoir. As of 2001, completed bathymetric surveys of each reservoir reports conservation storage capacities of 695,271 acre-feet (below 220.5 feet mean sea level) for Choke Canyon Reservoir (Volumetric Survey of Choke Canyon Reservoir, TWDB September 23, 1993) and 241,241 acre-feet (below 94 feet mean sea level) for Lake Corpus Christi (Regional Water Supply Planning Study-Phase I Nueces River Basin, HDR, December, 1990).

d. Percentage of the Reservoir System capacity shall be determined on a daily basis and shall govern, in part, the inflow to be passed through the reservoir during the remaining days of the month.

e. Within the first ten days of each month, the City of Corpus Christi shall submit to the Commission a monthly report containing the daily capacity of the Reservoir System in percentages and mean sea levels as recorded for the previous month as well as reservoir surface areas and estimated inflows to Lake Corpus Christi assuming no impoundment of inflows at Choke Canyon Reservoir. The report shall indicate which gages or measuring devices were used to determine Reservoir System capacity and estimate inflows to Lake Corpus Christi.

f. Concurrent with implementing subparagraphs 2.b.(1) through 2.b.(3), the City shall proceed to:

1. Acquire land rights to properties necessary to re-open the Nueces River Overflow Channel and make the Nueces River Overflow Channel and Rincon Bayou Overflow Channel permanent features of the Rincon Bayou Diversion;

2. Construct and operate a conveyance facility to deliver up to 3,000 acre-feet per month of required Reservoir System "pass-throughs" directly from the Calallen Pool into the Upper Rincon Bayou by use of one or two of the five authorized points of diversion under Certificate of Adjudication No. 2464, being the existing San Patricio Municipal Water District point of diversion and/or a point on the North bank of the Calallen Pool located at Latitude 27.8823°N, Longitude 97.6254°W, also bearing S 27° 24' W, 4,739 feet from the southwest corner of the J.H.W. Ottman Survey, Abstract No. 212, San Patricio County, Texas, where the water will be pumped at the maximum rate of 45,000 gpm; and

3. Implement an on-going monitoring and assessment program designed to facilitate an "adaptive management" program for freshwater inflows into the Nueces Estuary.

4. Construction necessary to implement subparagraph 2.f.1. shall be accomplished by December 31, 2001 and work necessary to accomplish subparagraph 2.f.2. shall be accomplished by December 31, 2002.

5. In the event the City fails to timely complete the work set forth in subparagraphs 2.f.1. and 2.f.2., this amendment shall automatically terminate and the provisions of the Agreed Order of April 28, 1995 shall be reinstated and become operative despite this amendment, unless the Executive Director grants a modification after considering the recommendations of the Nueces Estuary Advisory Council.

g. The Executive Director is delegated authority to make modifications to subparagraph 2.f., after considering the recommendations of the Nueces Estuary Advisory Council. However, changes may be made through this process only with the City's consent if the changes result in increased costs to the City.

If the Executive Director makes modifications to subparagraph 2.f. as authorized in this paragraph, any affected person may file with the chief clerk a motion for reconsideration of the Executive Director's action no later than 23 days after the date the Executive Director mails notice of the modification to the City. This motion shall be considered under the provisions of 30 Texas Administrative Code § 50.39(d) and (e).

h. The City shall obtain all necessary permits from the Commission before beginning these projects. The deadlines set out above include time necessary to apply for, process and, if necessary, complete hearings on these permits.

3. a. The City of Corpus Christi, with the assistance and/or participation of federal, state and local entities, shall maintain a monitoring program to assess the effect of this

operating plan on Nueces Bay. The cornerstone of this program is the development of a salinity monitoring program. The program shall include at least two monitoring stations, one in upper Nueces Bay (Lat. 27°51'02", Long. 97°28'52") and one in mid Nueces Bay (Lat. 27°51'25", Long. 97°25'28") with the capability of providing continuous salinity and/or conductivity data, temperature, pH, and dissolved oxygen levels. Additional stations may be established at the recommendation of the Advisory Council (continued by paragraph 4 of this Agreed Order) to assess inflow effects throughout the estuarine system, but the City shall not be obligated to establish such additional stations except to the extent authorized by its City Council.

b. The City of Corpus Christi or its designated representatives shall monitor salinity levels in Upper and Mid-Nueces Bay. The lower (SLB) and upper (SUB) salinity bounds (in parts per thousand-ppt) developed for application of the Texas Estuarine Mathematical Programming Model and considered appropriate for use herein, are as follows:

	SLB	SUB		SLB	SUB
January	5	30	July	2	25
February	5	30	August	2	25
March	5	30	September	5	20
April	5	30	October	5	30
May	1	20	November	5	30
June	1	20	December	5	30

c. When the average salinity for the third week (the third week includes the seven days from the 15th through 21st) of any month is at or below the subsequent month's established SLB for upper Nueces Bay (Lat. 27°51'02", Long. 97°28'52"), no releases from the Reservoir System to satisfy targeted Nueces Bay inflow mounts shall be required for that subsequent month.

d. All data collected as a result of the monitoring program required by paragraph 3 of this Agreed Order shall be submitted monthly to the Commission within the first ten days of the immediately following month. The Nueces Estuary Advisory Council shall study the feasibility of developing a method of granting credits for inflows which exceed the required amounts to replace the credits that are set out in subparagraph 1.e.(l) and make recommendations to the Commission for possible implementation. That method shall have as its goal the maintenance of the proper ecological environment and health of related living marine resources and the provision of maximum reasonable credits towards monthly inflow requirements.

4. a. To assist the Commission in monitoring implementation of this Order and making recommendations to the Commission relating to any changes to this Agreed Order and the establishment of future operating procedures, the Nueces Estuary Advisory

Council shall be continued. Its members shall include, but are not limited to a qualified representative chosen by each of the following entities or groups: the Executive Director of the Texas Natural Resource Conservation Commission, whose representative shall serve as chair;the Texas Water Development Board; the Texas Parks and Wildlife Department; the Texas Department of Health; the General Land Office; the holders of Certificate of Adjudication No. 21-3214 (the Cities of Corpus Christi and Three Rivers and the Nueces River Authority; the University of Texas Marine Science Institute; Texas A&M University - Corpus Christi; Save Lake Corpus Christi; Corpus Christi Chamber of Commerce; the City of Mathis; Coastal Bend Bays and Estuaries Program, Inc.; a commercial bay fishing group; a conservation group (e.g. the Sierra Club and the Coastal Bend Bays Foundation); wholesale water suppliers who are customers of the Certificate Holders (e.g., the South Texas Water Authority and the San Patricio Municipal Water District); the Port of Corpus Christi Authority; and a representative of industry. The representatives should have experience and knowledge relating to current or future water use and management or environmental and economic needs of the Coastal Bend area.

b. No modification shall be made to this Order without the unanimous consent of the Certificate Holders, except to the extent provided by law.

c. Matters to be studied by the Nueces Estuary Advisory Council and upon which the Executive Director shall certify recommendations to the Commission shall include, but are not limited to:

(1) the effectiveness of the inflow requirements contained in this Agreed Order on Nueces Estuary and any recommended changes;

(2) the effect of the releases from the Reservoir System upon the aquatic and wildlife habitat and other beneficial and recreational uses of Choke Canyon Reservoir and Lake Corpus Christi;

(3) the development and implementation of a short and long-term regional water management plan for the Coastal Bend Area;

(4) the salinity level to be applied in Paragraphs 1.e. and 3.c., at which targeted inflows in the subsequent month may be suspended;

(5) the feasibility of discharges at locations where the increased biological productivity justifies an inflow credit computed by multiplying the amount of discharge by a number greater than one; and development of a methodology for granting credits for inflows which exceed the required amount to replace the credits that are set out in subparagraph 1.e. That methodology shall have as its goal the maintenance of the proper ecological

environment and health of related living marine resources and the provision of maximum reasonable credits towards monthly inflow requirements; and,

(6) any other matter pertinent to the conditions contained in this Agreed Order.

5. This Agreed Order shall remain in effect until amended or superseded by the Commission.

Issued date: APR 05 2001

TEXAS NATURAL RESOURCE
CONSERVATION COMMISSION

Robert J. Huston, Chairman

CITY OF CORPUS CHRISTI - UTILITIES BUSINESS OFFICE

U T I L I T Y R A T E S C H E D U L E

MONTHLY CHARGE FOR WATER SERVICE

Effective August 1, 2012

MINIMUM MONTHLY CHARGE (FOR FIRST 2,000 GALLONS)

INSIDE CITY LIMITS:			OUTSIDE CITY LIMITS:		
Meter Size		Minimum	Meter Size		Minimum
5/8" x 3/4"	Residential $	8.720	5/8" x 3/4"	Residential $	10.460
5/8" x 3/4"	Commercial	12.580	5/8" x 3/4"	Commercial	15.100
1"	. . . . .	18.870	1"	. . . . .	22.640
1 1/2"	. . . . .	31.460	1 1/2"	. . . . .	37.750
2"	. . . . .	62.900	2"	. . . . .	75.480
3"	. . . . .	100.640	3"	. . . . .	120.770
4"	. . . . .	201.290	4"	. . . . .	241.550
6"	. . . . .	314.520	6"	. . . . .	377.420
8" or larger	. . . . .	629.030	8" or larger	. . . . .	754.840

MONTHLY VOLUME CHARGES PER 1,000 GALLONS (above the minimum level)

INSIDE THE CITY LIMITS:				OUTSIDE THE CITY LIMITS:			
PER 1000/GALLONS				PER 1000/GALLONS			
Residential				Residential			
First 2,000	Gallons	Minimum		First 2,000	Gallons	Minimum	
Next 4,000	. . . . .	$	4.172	Next 4,000	. . . . .	$	1.695
Next 4,000	. . . . .		5.215	Next 4,000	. . . . .		2.119
Next 5,000	. . . . .		5.997	Next 5,000	. . . . .		2.437
Next 15,000	. . . . .		7.301	Next 15,000	. . . . .		2.967
Next 20,000	.....		8.865	Next 20,000	.....		3.602
Next 50,000	.....		9.648	Next 50,000	.....		3.92
Over 100,000	.....		10.43	Over 100,000	.....		4.238
Commercial				Commercial			
First 2,000	Gallons	Minimum		First 2,000	Gallons	Minimum	
Over 2,000	. . . . .	$	5.172	Over 2,000	. . . . .	$	2.412
Large Volume-				Large Volume-			
Minimum		Minimum		Minimum		Minimum	
First 10,000,000	Gallons	$	16,349.000	First 10,000,000	Gallons	$	27,279.000
Over 10,000,000	. . . . .		3.597	Over 10,000,000	. . . . .		1.493
Residential Irrigation Water on separate meter				Residential Irrigation Water on separate meter			
First 2,000	Gallons	$	Minimum	First 2,000	Gallons	$	Minimum
Next 4,000	. . . . .		7.301	Next 4,000	. . . . .		4.671
Next 4,000	. . . . .		8.865	Next 4,000	. . . . .		6.235
Next 5,000	. . . . .		9.648	Next 5,000	. . . . .		7.018
Next 15,000	. . . . .		10.430	Next 15,000	. . . . .		7.800
Agency for Resale							
Metered at the site of treatment				Water delivered through City facilities			
First 2,000	Gallons	Minimum		First 2,000	Gallons	Minimum	
Over 2,000	. . . . .	$	0.870	Over 2,000	. . . . .	$	1.493
Monthly charge for Raw Water				Golf Course/Athletic Field Iirrigation			
Effective September 1, 2012				First 2,000	Gallons		Minimum
				Over 2,000	. . . . .	$	2.542
Raw water rate payers ICL &OCL $0.856/TGAL							
Raw water non rate payers ICL & OCL $0.902/TGAL							

OPERATIONS PLAN FOR THE

LAKE CORPUS CHRISTI-CHOKE CANYON RESERVOIR SYSTEM

The following operations plan for the Lake Corpus Christi –Choke Canyon Reservoir water system provides for the two reservoirs to be operated as a regional water supply with primary purpose to be furnishings a dependable supply to the people in the Coastal Bend area. The plan also recognizes the need for the recreational facilities for public use and the Texas Water Commission adjudicated water permit which requires a minimum flow of 151,000 acre-feet of water annually to bays and estuaries from return flows, spills, or fresh water releases from Lake Corpus Christi once Choke Canyon Reservoir fills.

The Plan consists of four phases of operation depending on the water levels in the two reservoirs.

PHASE I - This phase applies only to the initial filling period of Choke Canyon Reservoir. It is necessary that this reservoir be filled at the earliest opportunity so that all structures and mechanical equipment can be tested. Initial filling of the reservoir also triggers the requirement that minimal flows be made available for bays and estuaries.

1. During the initial period, only the releases requires required by agreement between the City of Corpus Christi and the Texas Parks and Wildlife Department, varying between 15 and 33 cubic feet per second depending on the reservoir level, will be made unless Lake Corpus Christi elevation falls below elevation 86 feet.

2. If water user demand is less than 200,000 acre-feet annually and Lake Corpus Christi is at elevation 86 feet, water will be released from Choke Canyon to maintain this elevation until Choke Canyon Reservoir falls to elevation 184 feet.

3. When Lake Corpus Christi has fallen to elevation 86 feet and Choke Canyon has fallen to elevation 184 feet, Lake Corpus Christi will be allowed to drop to elevation 76 feet, at which time water will be released from Choke Canyon to allow user's intake structures at Lake Corpus Christi to be used.

4. Should water user demand excess 200,000 acre-feet annually, the water level of Lake Corpus Christi will be allowed to drop to elevation 76 feet prior to releases from Choke Canyon Reservoir.

PHASE II - This phase applies after Choke Canyon Reservoir is filled and water user demand is less than 150,000 acre-feet annually.

1. A minimum of 2,000 acre-feet per month will be released from Choke Canyon Reservoir to meet conditions of the release agreement between City of Corpus Christi and the Texas Parks and Wildlife Department.

2. Whenever Lake Corpus Christ water surface falls to elevation 88 feet and Choke Canyon Reservoir surface elevation is above 204 feet, releases will be made from Choke Canyon Reservoir to maintain Lake Corpus Christi surface at elevation 88 feet.

3. Whenever Lake Corpus Christi water surface is at or below elevation 88 feet and Choke Canyon Reservoir surface elevation is below 204 feet, the Choke Canyon release for the current month is made equal to the Lake Corpus Christi release from the preceding month. This minimizes drawdown at Lake Corpus Christi for recreation purposes and promotes a more constant quality of water by mixing Choke Canyon Reservoir releases with Lake Corpus Christi content.

PHASE III - This phase applies after Choke Canyon Reservoir is filled and water user demand is between 150,000 and 200,000 acre-feet annually. During this period, water release plan prepared by the Bureau of Reclamation will be followed to produce a dependable yield of 252,000 acre-feet.

1. A minimum of 200,000 acre-feet per month will be releases from Choke Canyon Reservoir to meet conditions of the release agreement between the City of Corpus Christi and the Texas Parks and Wildlife Department.

2. Whenever Lake Corpus Christi water surface is at or below elevation 88 feet, and the ratio of Choke Canyon Reservoir content to Lake Corpus Christi content (both at the end of the preceding month) exceeds the corresponding ratio with 6-foot drawdown at both reservoirs, the Choke Canyon Reservoir release for the current month is made equal to the Lake Corpus Christi release during the preceding month. This equalizes drawdown at the two reservoirs for recreation purposes and promotes a more constant quality of water by mixing Choke Canyon Reservoir releases with Lake Corpus Christi content.

PHASE IV - This phase applies after Choke Canyon Reservoir is filled, water user demand exceeds 200,000 acre-feet annually, and developed long-term supply is less than 300,000 acre-feet annually.

1. A minimum of 2,000 acre-feet per month will be released from Choke Canyon Reservoir to meet conditions of the release agreement between the City of Corpus Christi and the Texas Parks and Wildlife Department.

2. In order to provide maximum dependable yield from the two reservoirs, the water level in Lake Corpus Christi will be allowed to drop top elevation 74.0 feet (Ordinance Changed #022661) before water is released from Choke Canyon Reservoir in excess of the 2,000 acre-feet per month requirement. When the elevation of Choke Canyon Reservoir drops to 155 feet, Lake Corpus Christi will be lowered to its minimum elevation.

LAKE CORPUS CHRISTI-CHOKE CANYON RESERVOIR STATISTICAL DATA

	Capacity, Acre-Feet*	Water Elevation When Full, Feet	Minimum Functional Elevation, Feet
Lake Corpus Christi	272,000	94.0	76.0
Choke Canyon Reservoir	692,000	220.5	147.5

Intake Structure Elevations of Customers Withdrawing Water Directly from Lake Corpus Christi:

	Elevation, Feet
City of Mathis	73.0
Beeville Water Authority	74.0
Alice Water Authority	67.0
City of Corpus Christi	55.0

Annual Lake Corpus Christi Withdrawals:

Fiscal Year	Total Withdrawn From Lake, Acre-Feet
1975-76	86,416
1976-77	86,408
1977-78	101,596
1978-79	96,029
1979-80	106,851
1980-81	104,657
1981-82	107,002
1982-83	107,348
1983-84	119,701
1984-85	90,226
1985-86	105,469

* 1 acre-foot = 325,850 gallons

Ordinance adopting the Water Conservation Plan and Drought Contingency Plan; Amending City Code of Ordinances, Chapter 55, Article XII Water Conservation, regarding water resource management including drought restrictions and surcharges, providing an effective date of June 3, 2013; and providing for penalties.

Section 1. The Water Conservation Plan attached as Exhibit A is hereby adopted.

Section 2. The Drought Contingency Plan attached as Exhibit B is hereby adopted.

Section 3. The Corpus Christi Code of Ordinances, Chapter 55, Utilities, Article XII Water Conservation, Sections 55-150 through 55-156, and Sections 55-158 through 55-159 are repealed and replaced with the following sections to read as follows:

ARTICLE XII WATER RESOURCE MANAGEMENT

Sec. 55-150 Scope, purpose, and authorization

(a) *Scope.* There is hereby established a City of Corpus Christi Water Conservation Plan and Drought Contingency Plan. The City of Corpus Christi Water Conservation Plan and Drought Contingency Plan 2013, dated May 28, 2013, a true copy of which is on file in the office of the city secretary, is adopted, and shall be followed in matters concerning water conservation, drought management, and water supply enhancement programs.

(b) *Declaration of policy.*

(1) It is hereby declared that the general welfare requires that the water resources available to the city be put to the maximum beneficial use to the extent to which they are capable, and that the waste or unreasonable use, or unreasonable method of use of water be prevented, and the conservation of such water is to be extended with a view to the reasonable and beneficial use thereof in the interests of the people of the area served by the city's water resources and for the public welfare.

(2) In making decisions under this article concerning the allocation of water between conflicting interests, highest priority will be given to allocation necessary to support human life and health; i.e., the minimum amount of water necessary for drinking, prevention of disease, and the like. Second highest priority will be given to allocations which will result in the least loss of employment to persons whose income is essential to their families.

(c) *Authorization.* The city manager, or his designee, upon the recommendation of the assistant city manager, public works and utilities, is hereby authorized and directed to implement the applicable provisions of this article upon their determination that such implementation is

necessary to protect the public welfare and safety.

(d) In this Article, "City Manager" means the City Manager or the City Manager's designee.

Sec. 55-151 Water Conservation Measures at All Times.

(a) The following measures are year-round water conservation best management practices that are in effect at all times, regardless of the reservoir levels or drought contingency levels.

(1) **Prohibition on wasting water**: Actions leading to wasting of water are prohibited and will be enforced. No person shall:

a. Allow water to run off property into gutters or streets.
b. Permit or maintain defective plumbing in a home, business establishment or any location where water is used on the premises. Defective plumbing includes out-of-repair water closets, underground leaks, defective or leaking faucets and taps.
c. Allow water to flow constantly through a tap, hydrant, valve, or otherwise by any use of water connected to the City water system.
d. Use any non-recycling decorative water fountain.
e. Allow irrigation heads or sprinklers to spray directly on paved surfaces such as driveways, parking lots, and sidewalks in public right-of-ways.
f. Operate an irrigation system at water pressure higher than recommended, causing heads to mist, or to operate with broken heads.

(2) **Time of Irrigation**: Irrigation by spray or sprinklers is prohibited between the hours of 10:00 AM and 6:00 PM. It is still permissible to water by hand or by drip irrigation at any time of day, unless the City enters Stage 4 Drought.

(3) **Restaurant Water Saving:** Commercial dining facilities must only serve water upon request.

Sec. 55-152 Drought Management: Drought Contingency Stages.

(a) The level of drought severity determines the extent of potential water use restrictions that shall be implemented. Following are the levels of drought in the form of Stages:

1. Stage 1: Mild water shortage condition
2. Stage 2: Moderate water shortage condition
3. Stage 3: Severe water shortage condition
4. Stage 4: Critical water shortage condition
5. Stage 5: Emergency water shortage condition

(b) Criteria for Initiation and Termination of Drought Response Stages

(1) The City Manager, or designee, shall monitor water supply and/or demand conditions on a weekly basis and shall determine when conditions warrant initiation or termination of each stage, that is, when the specified "triggers" are reached. However, the City Manager, in the exercise of the City Manager's discretion, may initiate or terminate any stage when the City Manager deems necessary at any particular time.

(2) The triggering criterion to be monitored for determining drought response stages is (1) the combined reservoir storage levels of Choke Canyon Reservoir and Lake Corpus Christi or (2), in the alternative for Stage 1, Lake Texana's level.

(3) Whenever any of the stages listed below are triggered, the City Manager shall publish a public notice of the particular stage, in the daily newspaper of general circulation in Nueces County.

(4) To the extent of City's legal authority, the City Manager shall require the City's raw water and wholesale treated water customers to issue public notice advising their water customers of conservation and drought management activities consistent with the stages listed below.

(c) The triggering criterions are as follows:

(1) Stage 1 – Mild Water Shortage Condition

Requirements for initiation – The combined storage level of Choke Canyon Reservoir and Lake Corpus Christi declines below **50 percent** or Lake Texana storage level declines below 40%.

Requirement for termination – Stage 1 of the Plan may be rescinded when the combined storage level of Choke Canyon Reservoir and Lake Corpus Christi increases above 60 percent or Lake Texana storage level increases above 50%. Either of these conditions must exist for a period of 15 consecutive days before termination of Stage 1.

(2) Stage 2 – Moderate Water Shortage Condition

Requirements for initiation – The combined storage level for Choke Canyon Reservoir and Lake Corpus Christi declines to below **40 percent**.

Requirement for termination – Stage 2 of the Plan may be rescinded when the combined storage level increases above 50 percent for a period of 15 consecutive days. Upon termination of Stage 2, Stage 1 becomes operative.

(3) Stage 3 – Severe Water Shortage Condition

Requirements for initiation – The combined storage levels declines to below **30** percent.

Requirement for termination – Stage 3 of the Plan may be rescinded when the combined storage level increases above 40 percent for a period of 15 consecutive days. Upon termination of Stage 3, Stage 2 becomes operative.

(4) Stage 4 – Critical Water Shortage Condition

Requirements for initiation – The combined storage levels of Choke Canyon Reservoir and Lake Corpus Christi declines to below **20 percent**.

Requirement for termination – Stage 4 of the Plan may be rescinded when the combined storage level increases above 30 percent for a period of 15 consecutive days. Upon termination of Stage 4, Stage 3 becomes operative.

(5) Stage 5 – Emergency Water Shortage Condition

Requirements for initiation – When the City Manager, or designee, determines that a water supply emergency exists based on:

- A major water line breaks, or pump or system failures occur, which causes unprecedented loss of capability to provide water service; or
- Water production or distribution system limitations; or
- Natural or man-made contamination of the water supply source occurs.

Requirement for termination – The emergency water shortage condition may be rescinded when the City Manager, or designee, deems appropriate.

Sec. 55-153. Drought Management: Drought Best Management Practices Per Stage

(a) In order to achieve water use reduction during drought, a series of best management practices will be enacted and enforced at each stage of a drought. These best management practices (BMP) are listed below by stage. During Stages 2, 3, and 4, requests for exceptions may be presented to the Director of Water Operations or his designee.

(b) Stage 1 Response – MILD Water Shortage Conditions

(1) Target: Achieve a *voluntary* 5% reduction in daily treated water demand relative to treated water demand with the water use restrictions below.

(2) Best Management Practices for Supply Management:

The City will enact voluntary measures to reduce or discontinue the flushing of water mains if practicable and utilize reclaimed water for non-potable uses to the greatest extent possible.

(3) Water Use Restrictions for Reducing Demand

a. Water customers are requested to voluntarily limit the irrigation of landscaped areas to **once per week.** The watering schedule will be determined by the City Manager or designee.

b. All operations of the City of Corpus Christi shall adhere to water use restrictions prescribed for Stage 2 of the Plan.

c. Water customers are requested to practice water conservation and to minimize or discontinue water use for non-essential purposes.

(c) Stage 2 Response – MODERATE Water Shortage Conditions

(1) Target: During Stage 2, achieve a 10% reduction in daily treated water demand relative to treated water demand with the water use restrictions below.

(2) Best Management Practices for Supply Management:

In addition to the best management practices for supply management listed under Stage 1, the City will also do the following during Stage 2:

a. Use more repair crews if necessary to allow for a quicker response time for water-line leak repair; and

b. City crews (Water and other departments) begin monitoring customers' compliance with Stage 2 restrictions during the course of their daily rounds.

(3) The following water use restrictions shall apply to all persons during Stage 2:

a. Irrigation of landscaped areas with hose-end sprinklers or automatic irrigation systems shall be limited to **once per week**. The watering schedule will be determined by the City Manager or designee. Customers will be made aware of their designated watering day in accordance with Drought Contingency Plan.

However, irrigation of landscaped areas is permitted on any day if it is by means of a hand-held hose (with positive shutoff nozzle), a faucet filled bucket or watering can of five (5) gallons or less, or drip irrigation system with a positive shutoff device. Exceptions for this restriction may be permitted, upon

review and approval by the Director of Water Operations or his designee for the following uses: new plantings (for up to 60 days), vegetable gardens, athletic playing fields, and botanical gardens. In addition, this restriction does not apply to customers irrigating with well water or an aerobic septic system. Customers irrigating with well water or an aerobic septic system must apply for a permit from the City Water Department to be prominently posted on the premises within two (2) feet of the street number located on the premises.

b. Use of water to wash any motor vehicle, motorbike, boat, trailer, airplane or other vehicle is prohibited except on designated watering days. However, washing of boats and/or flushing of boat motors is permitted upon immediate exit of water body. Such washing, when allowed, shall be done with a hand-held bucket or a hand-held hose equipped with a positive shutoff nozzle for quick rinses. Vehicle washing may be done at any time on the immediate premises of a commercial car wash. Further, such washing may be exempted from these regulations upon review and approval by the Director of Water Operations or his designee if the health, safety, and welfare of the public is contingent upon frequent vehicle cleansing, such as garbage trucks and vehicles used to transport food and perishables.

c. Use of water to fill, refill, or add to any indoor or outdoor swimming pools, wading pools, or Jacuzzi-type pools is prohibited except on designated watering days.

d. Operation of any ornamental fountain or pond for aesthetic or scenic purposes is prohibited except where necessary to support aquatic life.

e. Use of water from hydrants shall be limited to fire fighting, related activities, or other activities necessary to maintain public health, safety, and welfare, except that use of water from designated fire hydrants for construction purposes may be allowed under special permit from the City of Corpus Christi Water Department.

f. Use of water for the irrigation of golf course greens, tees, and fairways is prohibited except on designated watering days. However, if the golf course utilizes a water source other than that provided through City of Corpus Christi Water Department infrastructure, the facility shall not be subject to these regulations.

g. The use of water to maintain integrity of building foundations is limited to designated watering days and is only permitted by use of hand-held hose or drip irrigation.

h. The following uses of water are defined as non-essential and are prohibited:
   1) Wash-down of any sidewalks, walkways, driveways, parking lots, tennis courts, or other hard-surfaced areas, except if it is in the interest of public health and safety.

   2) Use of water to wash down buildings or structures for purposes other than immediate fire protection without permit granted by the Director of Water Operations or his designee..

   3) Use of water for dust control without permit granted by the Director of Water Operations or his designee.

(d) Stage 3 Response – SEVERE Water Shortage Conditions

(1) Target: During Stage 3, achieve a 15% reduction in total daily treated water demand relative to treated water demand with the water use restrictions below.

(2) Best Management Practices for Supply Management:

In addition to the best management practices for supply management listed under Stage 2, the City will also do the following during Stage 3:

a. Eliminate the flushing of water mains unless required for decontamination and/or public safety; and
b. Review customers' water usage for compliance based on the previous month's water use and notify violators verbally or in writing as the situation dictates.

(3) Water Use Restrictions for Demand Reduction:

All requirements of Stage 2 shall remain in effect during Stage 3 except as modified below:

a. Irrigation of landscaped areas shall be **limited to once every other week.** The watering schedule will be determined by the City Manager or designee. Customers will be made aware of their designated watering day. However, irrigation of landscaped areas is permitted on any day if it is by means of a hand-held hose (with positive shutoff nozzle), a

faucet filled bucket or watering can of five (5) gallons or less, or drip irrigation system with a positive shutoff device. Exceptions for this restriction may be permitted, upon review and approval by the Director of Water Operations or his designee, for the following uses: new plantings (for up to 60 days), vegetable gardens, athletic playing fields, and botanical gardens. In addition, this restriction does not apply to customers irrigating with well water or an aerobic septic system. Customers irrigating with well water or an aerobic septic system shall still apply for a permit from the City Water Department to be prominently posted on the premises within two (2) feet of the street number located on the premises.

b. The watering of golf course fairways with potable water is prohibited. The watering of greens and tees are limited to once every other week unless the golf course utilizes a water source other than that provided through City of Corpus Christi Water Department infrastructure or done by means of hand-held hoses, hand-held buckets, or drip irrigation.

(4) During Stage 3, the following measures are optional water use restrictions that may be implemented by the City Manager, or designee, with City Council approval , as conditions warrant:

a. The use of water for construction purposes from designated fire hydrants under special permit is to be discontinued.
b. For residential and multi-unit customers, a drought surcharge of up to and including 100% of the total monthly water bill over the monthly allocation may be added to the customers' bill to deter discretionary water use.

(e) Stage 4 Response – CRITICAL Water Shortage Conditions

(1) Target: During Stage 4, achieve a 30% or greater reduction in daily treated water demand relative to treated water demand with the water use restrictions below. An additional surcharge will be added to each utility bill during Stage 4 water shortage conditions to discourage discretionary water use, as described in Section 55-154 for retail customers and Section 55-159 for wholesale customers.

(2) Best Management Practices for Supply Management:

In addition to the best management practices for supply management listed under Stage 3, the City will also do the following during Stage 4:

- Upon written notice, disconnect the water meters of willful violators if absolutely necessary to prevent the deliberate wasting of water.

(3) Water Use Restrictions for Demand Reduction:

All requirements of Stage 2 and 3 shall remain in effect during Stage 4 except as modified below:

a) Irrigation of landscaped areas shall be **prohibited at all times**.

b) Use of water to wash any motor vehicle, motorbike, boat, trailer, or other vehicle not occurring on the premises of a commercial car wash and not in the immediate interest of public health, safety, and welfare is prohibited.

c) The filling, refilling, or adding of water to swimming pools, wading pools, and jacuzzi-type pools, and water parks (unless utilizing water from a non-city alternative source) is prohibited.

d) The use of water to maintain the integrity of a building foundation is still permitted on the designated Stage 3 watering day and shall be done by hand or drip irrigation method.

(4) During Stage 4, the following measures are optional water use restrictions that may be implemented by the City Manager, or designee, with City Council approval, as conditions warrant:

a) No application for new, additional, expanded, or increased-in-size water service connections, meters, service lines, pipeline extensions, mains, or water service facilities of any kind shall be approved, and time limits for approval of such applications are hereby suspended for such time as this drought response stage shall be in effect.
b) For residential and multi-unit customers, a drought surcharge of up to and including 100% of the total monthly water bill over the monthly allocation may be added to the customers' bill to deter discretionary water use.

(f) Stage 5 Response – EMERGENCY Water Shortage Conditions

(1) Target: During Stage 5, achieve a 50% or greater reduction in daily treated water demand relative to treated water demand with the below water use

restrictions. Surcharges and reduced allocations are enforceable during Stage 5 water shortage conditions, as described in Section 55-154.

During emergency conditions such as system outage, supply source contamination, or supply sources draining empty, alternative water sources and/or alternative delivery mechanisms may be necessary with prior approval of the City Manager. For emergency water shortage conditions associated with contamination of Nueces Basin stored supplies, the City, under the City Manager's direction, will cease pumping from the Nueces River and will contact the LNRA to identify additional, temporary water that may be available from Lake Texana on a short-term basis to meet essential water needs. For emergency water shortage conditions associated with contamination of Lake Texana supplies, the City, under the City Manager's direction, will cease pumping from the Mary Rhodes Pipeline.

(2) Best Management Practices for Supply Management:

In addition to the best management practices for supply management listed under Stage 4, the City will also do the following:

- Call the 10 largest water customers in the area affected by the emergency condition, and if necessary, use runners in key areas to begin spreading the message of a major outage.

(3) Water Use Restrictions for Demand Reduction:

During Stage 5, all requirements of Stage 2, 3, and 4 shall remain in effect except as modified below:

a) Irrigation of landscaped areas is absolutely prohibited.

b) Use of water to wash any motor vehicle, motorbike, boat, trailer, or other vehicle is absolutely prohibited.

c) Associated uses of water not related to business process which are discretionary, such as equipment washing, shall be deferred until the Stage 5 emergency has been terminated.

(4)During Stage 5, the following measures are optional water use restrictions that may be implemented by the City Manager, or designee, with City Council approval, as conditions warrant:

For residential and multi-unit customers, a drought surcharge of up to and including 100% of the total monthly water bill over the monthly allocation may be added to the customers' bill to deter discretionary water use.

Sec. 55-154. Surcharges for Drought Stages 3, 4 – 5 and Service Measures

(a) General

(1) The surcharges established herein are solely intended to regulate and deter the use of water during a period of serious drought in order to achieve necessary water conservation. The City Council expressly finds that the drought poses a serious and immediate threat to the public and economic health and general welfare of this community, and that the surcharges and other measures adopted herein are essential to protect said public health and welfare.

(2) This section, and the surcharges and measures adopted herein are an exercise of the City's regulatory and police power, and the surcharges and connection fees are conservation rates intended to meet fixed costs as a result of lost revenue.

(3) With City Council approval, the City Manager or designee is authorized to determine trigger points and surcharges during Stages 3, 4 and 5 Emergency Water Shortage conditions.

(4) In this section, institutional customer means city utility customer which operates as a not-for-profit entity.

(5) A customer may appeal an allocation or drought surcharge triggering point established under this Section to the Director of Water Operations or his designee on grounds of unnecessary hardship through the process outlined in Section 55-155.

(6) Drought surcharge funds will first be applied towards annual debt service payments and operating and maintenance expenses of the Water Department as reflected in the City operating budget to offset revenue loss due to drought conditions. Additional funds will be reported to City Council for City Council direction.

*(*b) *Residential water customers, who are not billed through a master water meter.*

1. A monthly base amount of 3,000 gallons shall be established as a trigger point for each customer. Water consumption up to and including this amount will not include a drought surcharge
2. Above the 3,000 gallon monthly consumption trigger point, with City Council approval, a drought surcharge shall be added up to and including 100% of the customer's total monthly water bill over the allocation.

(c) *Residential customers who are billed from a master water meter.*

1. Once Stage 2 condition has been declared, property managers of multi-tenant units shall notify the City Director of Water Operations of number of residential units in their facility for determination of allocations. Until so notified, the City shall calculate the allocation based on two residential units per master water meter. A monthly base amount of 3,000 gallons shall be established as a trigger point for each residential unit.
2. When consumption for the month is less than or equal to 3,000 gallons times the number of residential units, there will be no surcharge.
3. With City Council approval, when consumption is above the 3,000 gallons times the number of units, a drought surcharge shall be added up to and including 100% of the customer's total monthly water bill over the allocation.

(d) Commercial or institutional customer

(1) A monthly water usage allocation shall be established by the City Manager or designee for each commercial or institutional customer.

(2) Method of establishing allocation:

a. When the combined reservoir capacity is less than 20% of total capacity (Stage 4), the commercial or institutional customer's allocation shall be 90 percent of the customer's usage for the corresponding month's billing period during the previous 12 months prior to the implementation of Stage 2 condition.

b. If the customer's billing history is shorter than 12 months, the monthly average for the period for which there is a record shall be used for any monthly period for which no history exists.

c. Provided, however, a customer, 90 percent of whose monthly usage is less than 6,000 gallons, shall be allocated 6,000 gallons.

d. The City Manager shall give best effort to see that notice of each commercial or institutional customer's allocation is mailed to such customer.

e. If, however, the customer does not receive such notice, it shall be the customer's responsibility to contact the City' Utilities Billing Office to determine the allocation, and the allocation shall be fully effective notwithstanding lack of receipt of written notice.

f. Upon request of the customer or at the initiative of the City Manager, the allocation may be reduced or increased by the City Manager,

1. if one nonresidential customer agrees to transfer part of its allocation to another nonresidential customer, or

2. if other objective evidence demonstrates that the designated allocation is inaccurate under present conditions.

(e) Industrial customers, who use water for processing.

(1) A monthly water usage allocation shall be established by the City Manager or designee for each an industrial customer, which uses water for processing (e.g., an industrial customer).

(2) Method of establishing allocation.

a. When the combined reservoir capacity of Choke Canyon Reservoir and Lake Corpus Christi is less than 20% of total capacity (Stage 4), the industrial customer allocation shall be 90 percent of the customer's usage for the corresponding month's billing period during the previous 12 months prior to the implementation of Stage 2 condition.

b. If the customer's billing history is shorter than 12 months, the monthly allocation shall be 1/12 of 90% of the customer’s maximum annual contracted amount until 12 months of billing history are established. However if the industrial customer does not have a water contract and does not have at least 12 months of billing history, then the new industrial customer will provide data regarding expected water use and City will determine allocation based on 90% of expected use to determine initial allocation until 12 months of billing history are established.

c. The City Manager shall give his best effort to see that notice of each industrial customer's allocation is mailed to such customer.

d. If, however, the industrial customer does not receive such notice, it shall be the customer's responsibility to contact the City Utilities Billing Office to determine the allocation, and the allocation shall be fully effective notwithstanding lack of receipt of written notice.

e. Upon request of the industrial customer or at the initiative of the City Manager, the allocation may be reduced or increased by the City Manager, if:

1. The designated period does not accurately reflect the customer's normal water usage because customer had to shut down a major processing unit for overhaul during the period.

2. The customer has added or is in the process of adding significant additional processing capacity.

3. The customer has shut down or significantly reduced the production of a major processing unit.

4. The customer has previously implemented significant permanent water conservation measures.

5. The customer agrees to transfer part of its allocation to another industrial customer.

6. Other objective evidence demonstrates that the designated allocation is inaccurate under present conditions.

(f) Commercial, institutional, and industrial customers shall pay the following drought surcharges:

(1) Customers whose allocation is 6,000 gallons through 20,000 gallons per month:

a. $5.00 per 1,000 gallons for the first 1,000 gallons over allocation.

b. $8.00 per 1,000 gallons for the second 1,000 gallons over allocation.

c. $16.00 per 1,000 gallons for the third 1,000 gallons over allocation.

d. $40.00 for each additional 1,000 gallons over allocation.

(2) Customers whose allocation is 21,000 gallons per month or more:

a. One times the block rate for each 1,000 gallons in excess of the allocation up through 5 percent above allocation.

b. Three times the block rate for each 1,000 gallons from 5 percent through 10 percent above allocation.

c. Five times the block rate for each 1,000 gallons from 10 percent through 15 percent above allocation.

d. Ten times the block rate for each 1,000 gallons more than 15 percent above allocation.

e. The surcharges shall be cumulative.

f. As used herein, "block rate" means the charge to the customer per 1,000 gallons at the regular water rate schedule at the level of the customer's allocation.

(g) *Nonresidential customer is billed from a master meter*.

(1) When a nonresidential customer is billed from a master meter which jointly measures water to multiple residential dwelling units (for example: apartments, mobile homes), the customer may pass along any surcharges assessed under this plan to the tenants or occupants, provided that:

a. The customer notifies each tenant in writing:

1. That the surcharge will be passed along.

2. How the surcharge will be apportioned.

3. That the landlord must be notified immediately of any plumbing leaks.

4. Methods to conserve water (which shall be obtained from the City).

b. The customer diligently maintains the plumbing system to prevent leaks.

c. The customer installs water saving devices and measures (ideas for which are available from the City) to the extent reasonable and practical under the circumstances.

(h) Water service to the customer may be terminated under the following conditions:

(1) Monthly residential water usage exceeds allocation by 4,000 gallons or more two or more times (which need not be consecutive months).

(2) Monthly water usage on a master meter which jointly measures water usage to multiple residential dwelling units exceeds allocation by 4,000 gallons times the number of dwelling units or more two or more times (which need not be consecutive months).

(3) Monthly nonresidential water usage for a customer whose allocation is 6,000 gallons through 20,000 gallons exceeds its allocation by 7,000 gallons or more two or more times (which need not be consecutive months).

(4) Monthly nonresidential water usage for a customer whose allocation is 21,000 gallons or more exceeds its allocation by 15 percent or more two or more times (which need not be consecutive months).

(5) For residential customers and nonresidential customers whose allocation does not exceed 20,000 gallons, after the first disconnection water service shall be restored upon request for a fee of $50.

(6) For such customers, after the second disconnection, water service shall be restored within 24 hours of the request for a fee of $500.

(7) If water service is disconnected a third time for such customer, water service

(8) shall not be restored until the City re-enters a level of water conservation less than Stage 3.For master meter customers, the service restoration fees shall be the same as above times the number of dwelling units.

(9) For nonresidential customers whose allocation is 21,000 gallons per month or more:

a. After the first disconnection, water service shall be restored upon request for a fee in the amount of "X" in the following formula:

X = $ 50 x Customer's Allocation in gallons / 20,000 gallons

b. After the second disconnection for said customers, water service shall be restored within 24 hours of the request for a fee of 10 times "X".

c. If water service is disconnected a third time for such customer, water service shall not be restored until the City re-enters a level of water conservation less than Stage 3.

d. The City Manager is directed to institute written guidelines for disconnection of water service under this provision, which will satisfy minimum due process requirements, if any.

(i) It shall be a defense to imposition of a surcharge hereunder, or to termination of service, that water used over allocation resulted from loss of water through no fault of the customer (for example, a major water line break) for the following conditions:

1. The customer shall have the burden to prove such defense by objective evidence (for example, a written certification of the circumstances by a plumber).
2. A sworn statement may be required of the customer.
3. This defense shall not apply if the customer failed to take reasonable steps for upkeep of the plumbing system, failed to reasonably inspect the system and discover the leak, failed to take immediate steps to correct the leak after discovered, or was in any other way negligent in causing or permitting the loss of water.

(j) When this section refers to allocation or water usage periods as "month," monthly," "billing period," and the like, such references shall mean the period in the City's ordinary billing cycle which commences with the reading of a meter one month and commences with the next reading of that meter which is usually the next month.

(1) The goal for the length of such period is 30 days, but a variance of two days, more or less, will necessarily exist as to particular meters.
(2) If the meter reader system is prevented from timely reading a meter by any obstacle which is attributable to the customer, the original allocation shall apply to the longer period without modification.

Sec. 55-155. Requests for exemptions and variances.

(a) The Director of Water Operations or his designee, may, in writing, grant a temporary variance to any of the provisions for water users found in this Article XII upon determination that failure to grant such variance would cause an emergency condition adversely affecting the public health, sanitation, or fire protection for the public or person requesting such a variance.

(b) A person requesting an exemption or variance from the provisions of this Ordinance shall file request on City-provided application for exemption/variance with the City Water Department within 5 days after a particular drought response stage has been invoked. All request forms shall be reviewed by the Director of Water Operations or his designee, and shall include the following:

1. Name and address of the water user(s).
2. Purpose of water use.
3. Specific provision(s) of the Ordinance from which the water user is requesting relief.
4. Detailed statement as to how the specific provision of the Ordinance adversely affects the water user or what damage or harm will occur to the water user or others if water user complies with this Plan.
5. Description of the exemption or variance requested
6. Period of time for which the exemption or variance is sought.
7. Alternative water use restrictions or other measures the water user is taking or proposes to take to meet the intent of this Plan and the compliance date.
8. Other pertinent information; or as required on permit application

(c) No exemption nor variance shall be retroactive or otherwise justify any violation of this ordinance occurring prior to the issuance of the exemption/variance.

(d) All requests for variances/exemptions shall be reviewed and determined within three business days of receipt of complete application.

(e) The Director of Water Operations or his designee shall consider requests of water users for special consideration to be given as to their respective particular circumstances and is hereby authorized to, in special cases, grant such variance from the terms of this plan if such compliance would cause an emergency condition adversely affecting the public health, sanitation, or fire protection for the public or person requesting such a variance as will not be contrary to the public interest, where, owing to special conditions, a literal enforcement of the provisions of this plan will result in unnecessary hardship, and so that the spirit of this plan shall be observed and substantial justice done.

(f) Should a permit for special exception be granted, it shall be in effect from the time of granting through the termination of the then current stage, unless revoked by the Director of Water Operations for noncompliance; provided, that the permit is prominently posted on the premises within two (2) feet of the street number located on the premises.

(g) A person denied request for permit or exception from these rules may appeal the decision to the Assistant City Manager for Public Works, Utilities and Transportation by submitting written request for appeal to the Assistant City Manager within five business days from issuance of denial. The decision of the Assistant City Manager shall be final.

(h) Violations of any permit condition may be enforced under Section 55-156.

Sec. 55-156 Violations, penalties, and Enforcement

(a) A violation under this article is a Class C misdemeanor. Any person that violates any provision of this article shall be subject to a fine of not more than five hundred dollars ($500.00) per violation per day. The culpable mental state required by Section 6.02 of the Texas Penal Code is specifically negated and dispensed with and a violation of this article is a strict liability offense.

(b) The commission of a violation of each provision, and each separate violation thereof, shall be deemed a separate offense, in and upon conviction thereof, shall be fined as hereinabove provided.

(c) If any person or a second person in the same household or premises, is found guilty of a second violation of this article, the water superintendent shall be authorized to discontinue water service to the premises where such violation occurs.

(d) Cases filed under this section shall be expedited and given preferential setting in municipal court before all other cases.

(e) Any person whose name is on file with the utilities billing office as the customer on the water account for the property where the violation occurs or originates shall be presumed to be the violator, and proof that the violation occurred on said premises shall

constitute prima facie evidence that the customer committed the violation, but said customer shall have the right to show that he did not commit the violation.

(f) If any person fails to respond to a citation or summons issued for a violation of this article within the time allowed, upon receipt of notice from the director or a judge of the municipal courts, the water superintendent is authorized to discontinue water service to the premises where such violation occurs.

Sec. 55-157 Effluent distribution; permit and regulations

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Sec. 55-158. - Operations plan for reservoir system.

To maximize the amount of water reliably available to the city and its water customers, the city manager shall operate the Lake Corpus Christi/Choke Canyon Reservoir System as follows:

(1) A minimum of two thousand (2,000) acre-feet per month will be released from Choke Canyon Reservoir to meet conditions of the release agreement between the City of Corpus Christi and the Texas Parks and Wildlife Department.

(2) In order to provide maximum dependable yield from the two (2) reservoirs, the water level in Lake Corpus Christi will be allowed to drop to elevation seventy-four (74) feet before water is released from Choke Canyon Reservoir in excess of the two thousand (2,000) acre-feet per month requirement.

(3) Under the Agreed Order of the Texas Natural Resource Conservation Commission under Certificate of Adjudication No. 21-3214, City shall (1) reduce targeted inflows of water to Nueces Bay to 1200 acre feet when reservoir system storage falls below forty (40) per cent of capacity, and (2) suspend targeted inflows when reservoir system storage falls below thirty (30) per cent of capacity.

Sec. 55-159. Procedures for allocating water to raw water and wholesale treated water customers on a pro rata basis during a water shortage.

(a) In the event that the triggering criterion specified in Section 55-152 for Stage 3 have been met, the City Manager, or designee, is hereby authorized to initiate allocation preparations of water supplies on a pro rata basis to raw water and wholesale treated water customers in accordance with Texas Water Code §11.039.

(1) A raw water or wholesale treated water customer's monthly allocation shall be a percentage of the customer's water usage baseline. The percentage will be set by

resolution of the city council based on the city manager's assessment of the severity of the water shortage condition and the need to curtail water diversions and deliveries, and may be adjusted periodically by resolution of the city council as conditions warrant. Once pro rata allocation is in effect, water diversions by or deliveries to each raw water or wholesale treated water customer shall be limited to the allocation established for each month.

(2)A monthly water usage allocation shall be established by the City Manager, or the City Manager's designee, for each raw water or wholesale treated water customer. The raw water or wholesale treated water customer's water usage baseline will be computed on the average water usage by month for the previous five-year period. If the raw water or wholesale treated water customer's billing history is less than five (5) years, the monthly average for the period for which there is a record shall be used for any monthly period for which no billing history exists.

(3)The City Manager shall provide notice, by certified mail, to each raw water or wholesale treated water customer informing them of their monthly water usage allocations and shall notify the news media and the Executive Director of the Texas Commission on Environmental Quality upon initiation of pro rata water allocation.

(4)Upon request of the raw water or wholesale treated water customer or at the initiative of the City Manager, the allocation may be reduced or increased if:

a. The designated period does not accurately reflect the raw water or wholesale treated water customer's normal water usage;

b. The customer agrees to transfer part of its allocation to another raw water or wholesale treated water customer; or

c. Other objective evidence demonstrates that the designated allocation is inaccurate under present conditions. A customer may appeal an allocation established under this section to the City Council of the City of Corpus Christi.

(b) Pro Rata Surcharges and Enforcement

(1) During any period when pro rata allocation of available water supplies is in effect, wholesale customers shall pay the following surcharges on excess water diversions:

a. 2.0 times the normal water charge per unit for water diversions and/or deliveries in excess of the monthly allocation up through 5 percent above the monthly allocation.

b. 2.5 times the normal water charge per unit for water diversions and/or deliveries in excess of the monthly allocation from 5 percent through 10 percent above the monthly allocation.

c. 3.0 times the normal water charge per unit for water diversions and/or deliveries in excess of the monthly allocation from 10 percent through 15 percent above the monthly allocation.

d. 3.5 times the normal water charge per unit for water diversions and/or deliveries more than 15 percent above the monthly allocation.

(c) *Variances.*

(1) The city manager, or the City Manager's designee, may, in writing, grant a temporary variance to the pro rata water allocation policies provided by this section if it is determined that failure to grant such variance would cause an emergency condition adversely affecting the public health, welfare, or safety, and if one (1) or more of the following conditions are met:

a. Compliance cannot be technically accomplished during the duration of the water supply shortage or other condition for which the plan is in effect.

b. Alternative methods can be implemented which will achieve the same level of reduction in water use.

(2) Raw water or wholesale treated water customers requesting an exemption from the provisions of this section shall file a petition for variance with the City Manager within five (5) days after pro rata allocation has been invoked.

(3) All petitions for variances shall be reviewed by the City Council, and shall include the following:

a. Name and address of the petitioner(s).

b. Detailed statement with supporting data and information as to how the pro rata allocation of water under the policies and procedures established in this section adversely affects the petitioner or what damage or harm will occur to the petitioner or others if petitioner complies with this section.

c. Description of the relief requested.

d. Period of time for which the variance is sought.

e. Alternative measures the petitioner is taking or proposes to take to meet the intent of this section and the compliance date.

f. Other pertinent information.

(4) Variances granted by the City Council shall be subject to the following conditions, unless waived or modified by the City Council.

a. Variances granted shall include a timetable for compliance.

b. Variances granted shall expire when the pro-rata allocation of water to raw water or wholesale treated water customers is no longer in effect, unless the petitioner has failed to meet specified requirements.

c. No variance shall be retroactive or otherwise justify any violation of this section occurring prior to the issuance of the variance.

(d) *Contractual remedies not affected.* Nothing in this section supersedes any remedies available to the City under any contract with a raw water or wholesale treated water customer due to the customer's failure to adopt or impose water conservation measures required by the contract.

Section 4. This ordinance takes effect on June 3, 2013.

Section 5. Severability

It is hereby declared to be the intention of the City that the sections, paragraphs, sentences, clauses, and phrases of this Ordinance are severable and, if any phrase, clause, sentence, paragraph, or section of this Ordinance shall be declared unconstitutional by the valid judgment or decree of any court of competent jurisdiction, such declaration shall not affect any of the remaining phrases, clauses, sentences, paragraphs, and sections of this Ordinance, since the same would not have been enacted by the City without the incorporation into this Ordinance of any such unconstitutional phrase, clause, sentence, paragraph, or section.

Section 6.

The change in law made by this Ordinance applies only to an offense committed on or after the effective date of this Ordinance. An offense committed before the effective date of this Ordinance is governed by the Ordinance in effect when the offense was committed, and the former Ordinance is continued in effect for that purpose. For purposes of this section, an offense was committed before the effective date of this Ordinance if any element of the offense occurred before that date.

That the foregoing ordinance was read for the first time and passed to its second reading on this the _____ day of _____, _____, by the following vote:

Nelda Martinez	_____	Chad Magill	_____
Kelley Allen	_____	Colleen McIntyre	_____
Rudy Garza	_____	Lillian Riojas	_____
Priscilla Leal	_____	Mark Scott	_____
David Loeb	_____		

That the foregoing ordinance was read for the second time and passed finally on this the _____ day of _____, _____, by the following vote:

Nelda Martinez	_____	Chad Magill	_____
Kelley Allen	_____	Colleen McIntyre	_____
Rudy Garza	_____	Lillian Riojas	_____
Priscilla Leal	_____	Mark Scott	_____
David Loeb	_____		

PASSED AND APPROVED, this the _____ day of _____, _____.

ATTEST:

_____	_____
Armando Chapa	Nelda Martinez
City Secretary	Mayor